15 DECEMBER 2007 - 10AM

Bob Cooper's

DECEMBER 15 2007

# SatFACTS

MONTHLY

Reporting on "The World" of satellite television in the Pacific and Asia

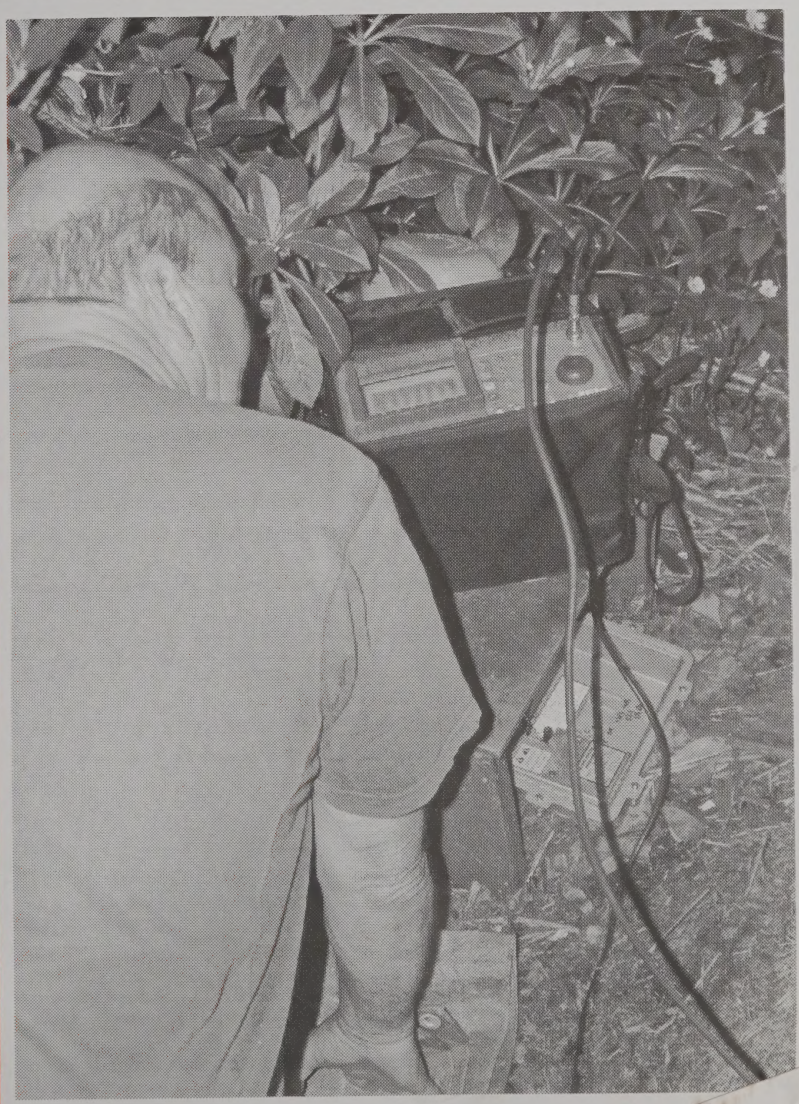
## IN THIS ISSUE

**720p, 1080i and the truth**

**Solomon Islands 'King' of television**

**mediaMAXEVO terrestrial + sat meter review**

- ✓ Latest Programmer News
- ✓ Latest Hardware News
- ✓ D2 - December 18, 2007
- ✓ Observer Reports



Vol. 14 ◆ No. 160

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freeview

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# SatFACTS MONTHLY

ISSN 1174-0779

**is published 12 times each year (on or about the 15th of each month) by Far North Cablevision, Ltd. This publication is dedicated to the premise that as we enter the 21st century, ancient 20th century notions concerning borders and boundaries no longer define a person's horizon. In the air, all around you, are microwave signals carrying messages of entertainment, information and education. These messages are available to anyone willing to install appropriate receiving equipment and, where applicable, pay a monthly or annual fee to receive the content of these messages in the privacy of their own home. Welcome to the 21st century - a world without borders, a world without boundaries.**

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www.bobcooper.tv

Subscription Rates
Within NZ: $70 p/y
Australia: AV-COMM Pty Ltd.
PO Box 225, Brookvale.
N.S.W. 2100
61-2-9939-4377
Elsewhere: US$75p/y
All copies sent airmail post.



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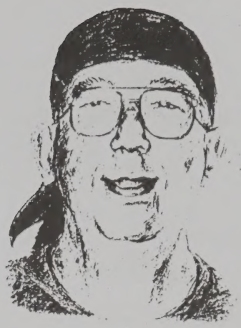
**Now year fourteen!**



**December 15, 2007**

## An urban myth exposed

On this page for September I quoted Paul Norris (Christchurch Polytech) who was suggesting, "Freeview could be heading for a PR disaster." There are those who seem intent upon pushing this scenario with no end to the creativity of the human mind. Example.

"If you call SKY and request installation of a decoder box (including aerial, LNB, cabling, labour) you will pay $145 including gst and no monthly charges to receive PRIME and TAB (not part of Freeview) as well as TVOne, 2, 3, C4, Maori, TV6, Stratos. How can I as a Freeview dealer compete against this when I cannot even offer PRIME or TAB and the STB costs me more than $145 just for openers?"

On the surface this would appear to be a very clever SKY promotion - add in non-Freeview available PRIME (owned by SKY) and TAB and essentially subsidise the installation. Who, knowing about this, would spend $500 for Freeview?

Immediately I traced down a top executive at SKY and he quickly dismissed this 'story' as *an urban myth*. Yes, for $145 it **is** possible to acquire a complete SKY installation that will receive PRIME. But **ONLY** Prime. Another option is to agree to pay around $18 a month for the 'Broadcast Package'. Just to double check the story I was hearing, my next stop was an equally important person at Freeview who responded; "I cannot find any evidence to corroborate the claim SKY are offering one-off (subsidised) fee / no subscription offer for all free-to-air channels. If any of your readers can verify this has or is happening, we'd appreciate knowing about it."

SKY freely admits to subsidising installs. "We have been losing $250-$300 per install since 1991, fifteen years before Freeview entered the market. We hate this but that is the cost of doing business." And SKY is not unique in this 'lose money to make money' approach. "Every pay TV company in the world does this; firms that sell razors, cell phones, low-end cameras do the same thing - a low-cost 'buy-in' in exchange for a long-term income commitment."

*Repeating the truth here*- SKY says there is no such thing as a $145 all inclusive Freeview competitive package out there. And Freeview says they see no evidence to the contrary. End of this urban myth.

The same person who advised me of the myth also had other less than complimentary things to say about the way SKY manages its contract installers. He wrote, "not many months ago, SKY made a big issue about SKY installers doing Freeview installations and many businesses which contracted to SKY were told, in no uncertain terms, that it was either 'Them or Us' and if they did, or continued to do, Freeview work, their source of SKY installations would discontinue. Even the Hills Signalmaster organisation ran afoul of SKY with the introduction of their version of the Freeview box."

My top level SKY source responds:

"*This is just plain false* and one of those urban myths that if get repeated enough people think it is true. We have been pretty consistent with our position on Install Contractors. During 8 months a year our contractors pretty much meet our demand. For 2 months a year we don't have enough work to keep them busy and for another two months each year they cannot keep up with our orders, backing us up as much as three weeks. One year ago we greatly increased our capacity with in-house and contract installers and this just about drove the industry into bankruptcy because we did not have enough work for them.

"*We do NOT care what work they do* for other people. Yes, Hills makes boxes for Freeview and what we have said to them is, 'Give us first priority above any other customers'. If a SKY subscriber wants the service or needs a service call we have to do it right away because every day without our service costs us real money. The secondary issue is that we are not crazy about the delays we face at peak times. If doing work for other people pushes delays then we have to add additional companies or in house capacity. I suspect the more important issue is none of this - rather, Freeview has no real need for contractors."

Freeview now claims 66,000 STBs sold - not quite certain whether that is at the factory, distributor or dealer level - and expresses pleasure with this 7-month result. SKY is approaching 700,000 so the ratio is roughly ten-to-one. Freeview now offers 8+ TV channels; SKY, give or take a few, 70; that ratio also around ten-to-one. No country in the world has to date totally abandoned FTA television in favour of 100% pay TV (to be precise there *are* a few islands where the ONLY TV is via pay TV). The New Zealand tussle continues.


**In Volume 14 ◆ Number 160**

720p, 1080i and other buzzwords - p. 7, Solomon's King of TV-p. 8, mediaMAXEVO field meter - to die for-p.10; late delivery apology -p.27

**Departments**

Programmer/Programming -p.2; Hardware/Equipment Update -p. 4; SatFACTS Digital Watch -p. 22; Supplemental Data -p. 24; With The Observers -p. 25


**-On the cover -**

**A field test meter you would LOVE to own! That's our cable TV tech John Taylor in the midst of a torrential downpour 'testing' the EVO S1; It passed the 'wet' test (p. 10, 27).**

LETTERS

**HDCP and HDMI**

"In SF#159 you infer that buying a TV set with HDCP capability is a negative. Presently, when purchasing a new TV in NZ there are no inbuilt Freeview capable tuners. On the other hand for the yet to be released DTT set top boxes, HDCP (+ HDMI) will be built in. This means the data stream instructions from the broadcaster (such as CanWest and TVNZ), if HDMI instructed to be 'encrypted' to prevent HD copying, without HDCP the TV set will either show nothing or possibly distorted TV picture and sound. The TV must be HDCP capable to decrypt the data stream - possibly even in the SD transmission mode (that is unclear at this point in time)."

IF, Queensland

This is quite possibly true but only in areas where HD swill be available (and then only via DTT). Seventy-five percent of the NZ land mass area will not have DTT, as we reported in SF#159, although the TV sets being sold in the non-DTT areas contain the same HDMI + HDCP 'feature'. Consumers are being told they 'must have this feature' for future availability of HD. And before HDCP became a 'sales point' in July in NZ, tens of thousands of sets were sold nation-wide without this feature which if HDCP is in fact required in DTT areas will leave the early set technology adopters up a creek without a decryption machine. We predict ongoing consumer confusion, retailer mis-information, and a level of chaos here largely because new product features are being rushed to market without adequate mid or long term planning.

**Australian DTT**

"There are currently well over 100 large-screen TV models (mostly HD but a few are 480 line). However, in screen sizes smaller than 26"/63cm I am just now (early December) seeing the first advertisements for inbuilt digital; tuners. A 19"/48cm TEAC with HDMI included is one; another more confusing is a 19" LG lacking a tuner but 'HDCP Ready' - without mentioning HDMI at all! It also claims a DVI-D input - whatever that is."

Al, NSW

DVI-D is the now defunct 24 pin system replaced by HDMI; chaos world-wide!

# PROGRAMMER PROGRAMMING PROMOTION UPDATE

**DECEMBER 15, 2007**

**JANUARY issue reminder: Because of the extended holiday period for our magazine's printer the January issue will not go into the mails until the 25th (of January).**

**North American update.** The battle between pirates hacking the DISH and Bell Nagra2 pay TV systems, and the underground industry favouring open access, has moved up one more notch. During the September to late November period both sides exchanged salvos - DISH and Bell making minor data stream changes, hackers responding (typically within 48 hours) with 'fixes'. Late in November, the pay guys regained the upper hand shutting down most FTA receivers on most channels (but not all) as well as cutting off emulators. For a few days, Dish and Bell had the upper hand in a universe estimated to be in excess of 750,000 non-paying users. Alas, by 5 December the pirate guys were back with 'fixes' although the underground word was, "*This latest ECM style can be made quite dynamic, and Bell and DISH can vary the ECM to take down the current fixes quickly.*" It is of course the size of this 'pirate universe' that drives the whole machine; each time there is a knock down by Dish and Bell, the pirate guys are looking at taking in over US$2,000,000 in a few days time by providing 'fixes'. Winning a battle is not the same as winning the war.

**Figure this one out.** Numbers. The American cable industry lost just over 1,000,000 subscribers during 2007. One would assume that the chief competitor, Dish and DirecTV via satellite, would have gained a like number - and to some extent this is true; both have grown. But not by 1m subscribers. So where have the viewing homes gone? Internet is one answer although measurement numbers are lacking detail. Another is OTA (over the air) which is facing a February 2009 analogue drop dead date with DVB-T/DTT only past that date. And in fact there are 70,000,000 TV sets in America not connected to cable or satellite. There is a sleeper here - after a 17 year drop in the annual sale of rooftop TV antennas in North America, sales have surged during 2007 doubling every six months. The reasons to go back to an aerial are many: (1) Very few cable systems, no satellite services offer the full compliment of local channels; (2) Cable (in particular) and satellite (to a lesser extent) experience outages which in the case of cable can last days while waiting for a service call response; (3) HD is very limited for both cable and satellite because of the bandwidth constraints - OTA FTA has it all, and the kicker - (4) there are no monthly charges.

**CUE TV.** "An eclectic mixture of programming" 24 x 7 with 82% produced within NZ; new as Freeview channel 23. Extra credits for Southern Institute of Technology (SIT) at home studies schedule allowing viewers to upgrade their educations.

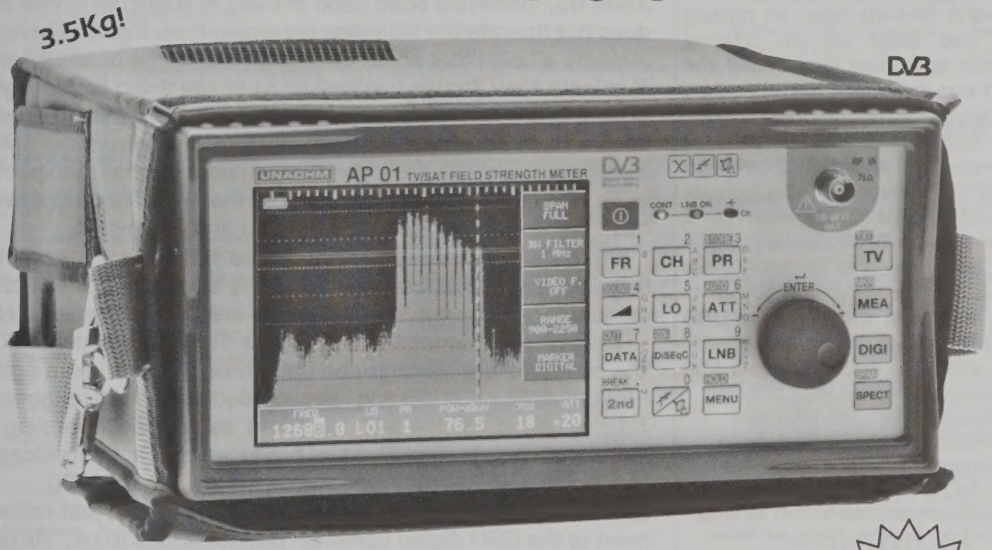
UNAOHM

70 years of professional test & measurement

# AP 01

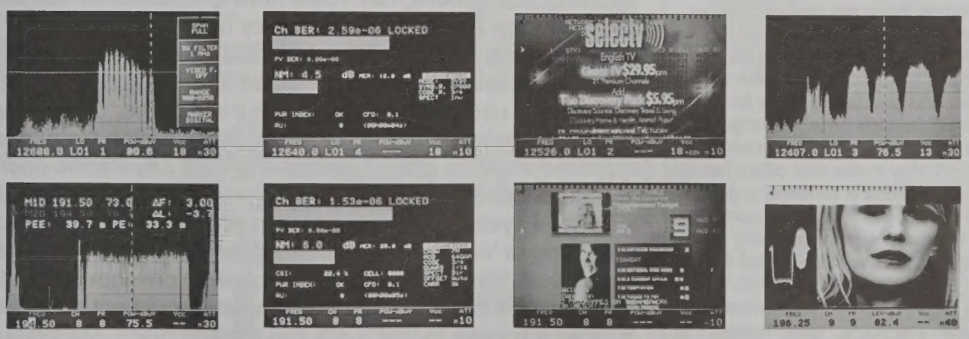
## A fresh new look,

*that's* **Simply powerful!**




*Real time spectrum display*

**Digital TV- DVB-T, DVB-H OFDM**
**Satellite- DVB-S DVBS-2 QPSK / 8PSK**
**MPEG 2 + NIT**
**5.7" Color LCD monitor** ***in real time!***
**AER– Echo Response for DVB-T to 67km** ***included!***
**Li-Ion battery**

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**EVO S1 = S2**

"The unit you have for testing (Editor's note - this issue, p. 10) is the EVO S1. The engineers from FTE have just been here for several days making critical tests within the Australian OTA and satellite world and we or rather they have found a couple of minor and quickly fixable quirks. For example, MER on QPSK is about 3 dB too high and is being addressed. And the MER in QAM is being raised to an end limit of 40 rather than 36. We did a side by side evaluation against a Rhode and Shwartz spec an costing $100k and used as an internal calibration source at Foxtel and the EVO S1 was well within the prescribed power accuracy range (Editor's note: +/- 1.5 dB) from 5 to 2100 MHz. A new, not yet priced, S2 version enlarges the transport stream capture from QAM to QAM, QPSK, 8PSK and COFDM with an 8PSK tuner; and, it does GSM detection as well. New software for the S1 allows you to datalog and then transfer to a USB stick. This allows the user to edit reports and treat the meter as a true extension of the user's PC."

Jason, aDigitalife Pty Ltd

SatFACTS was pleased to have an opportunity to test and review this particular meter given the plurality of enthusiastic reports one finds in technical forums from Europe. There are three categories of metering devices in our world presently: The hand held 'find the satellite' or 'find the OTA signal' variety which typically cost under $1,000 and for 90% of us 95% of the time, that is all we will need. Then there is the laboratory 'bench reference standard' with pricing over $50,000 which you would take out into the field only after checking to verify in writing it has a full coverage insurance policy that is up to date. In between these two extremes there are meters such as the Unaohm AP 01 (from Laceys.tv; p. 3 here) and the new EVO S1 offering the features of a lab instrument with the weight and size falling close to a handheld. In each case it is largely software that defines what you can (and cannot) do. Any meter that offers field software upgrades is probably a good selection provided only that the company behind the meter keeps releasing new versions which the base device will accept.

**Vanuatu Cover - SF#159?**

"Peter Escher's 'dish install' is embarrassing. String, clamps, pieces of wood, wall mount on a railing? And the extra bits along the side??? None necessary; 1m is all that is required!"

Craig Sutton, apsattv.com

HARDWARE EQUIPMENT PARTS

# UPDATE

**DECEMBER 15, 2007**

**D2 update.** There are as many 'items' about the transferring of the data streams from B3 as there are transponders (24). Still missing is an authoritative run down of the characteristics of the transponders and the footprints expected. We know D2 is sitting aside B3, that it has been used already in spectrum where B3 does not operate but little else is coming from Optus. There remains a belief that some Globecast and some or all UBI will illuminate New Zealand as well as Australia using the same sort of spot beam configuration introduced with D1 (which in theory means each country could have 50dBw+ levels from the same or similar services.) Based upon this 'version' of what to expect, hope springs eternal in New Zealand that minority groups will have first time programming from UBI and Globecast.

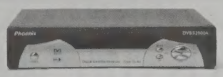
**The debate continues:** 720p versus 1080i. As we report (p. 7) there are serious differences about the advisability of selecting a standard - *any standard* at this stage in HD development. NZ HD aficionado Bonner Martin believes those who accept 720p as 'the standard' are relying upon data three or more years ago. Freeview's Steve Browning, as recorded in SF#159, suggests 720p is not so much a (NZ) 'standard' as an initial operating target - leaving to the individual broadcasters (and broadcasts as consecutive shows may well switch from 720p to 1080i) decisions about which format, when. David Wood, just-retired head of the EBU digital transition project, writes to us, "*All of the tests we have done here have led us to support for 720p, and we have always been honest and used the best equipment we can; we have nothing to sell at all, and no debt to any company or standard.*" As our (p. 7) report explores, the transition from 1080i to 1080p or 'backwards' to 720p is the key element to understanding what is being debated here.

**Major victory for the C-band** satellite world; ITU (International Telecommunications Union), in recently concluded meeting involving 164 nations, has voted heavily in favour of denying access to the 3.4-3.7 GHz frequency range by terrestrial (WiFi/IMT and similar) users. Australia, New Zealand and Fiji (to name 3 countries) previously elected to allow terrestrial wireless networks to use portions of this sub-band of the "C" satellite range (officially it is 3.4 to 4.2 GHz). In Fiji a High Court decision, expected as SF is going to press, Fiji TV's Sky Pacific operation has experienced significant problems with a local terrestrial telephone system provider and is asking the court to require the telephone to 'fix' the interference or leave the spectrum space now in use. Had Fiji (the country) followed previously adopted ITU regulations, the telephone company would not have been granted a license to use 3.4-3.7 in the first place. Malaysia, following ITU decision, promptly cancelled a recently granted license to a wireless firm for use of 2.5 - 3.5 GHz, noting, "*these bands interfere with satellite transmissions.*" NZ, meanwhile, is auctioning off 77 new frequency groups in the 3.5 GHz region; this on top of 71 issued in 2006.

# Phoenix Technology Group

*Satellite Equipment & Accessories One Stop Supermarket*

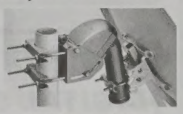
Phoenix 2.35m Motorized Extra Heavy Duty Mesh — $180 each, Buy 10 get one Free!



**Phoenix 2800A $90**
The Best FTA Available
Quantity price available

Dreamax DT470 $90ea
Irdeto 2 Rec min 5 buy
Perfect For Selectv

Zinwell 15K LNBF $24/each for box of 24



H-H Motor $85ea

SuperJack EZ2000 Positioner $50/each

Star V Box II
DiSEqC1.2 Positioner
$45 each *how low is this*

Actuator from 12' standard duty to 36' heavy duty
From $35/each to $220/each

**RG6 305m**
**Dual shield**
**$55/Box**
**Quad shield**
**$65/Box**

Folding Arm Dish
best dish for caravan kits
35cm $80 each Inc Case
64cm $25 each Wide Beam
78cm $44 each Aurora
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Made in Denmark

**Local Antennas Full range**
**In stock Now From $25 10 buy**

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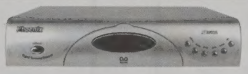
| Caravan Digital Ant | $80 | PBI C+Ku band LNBF | $65 |
| One Leg TV Antenna MNT 1.8m | $15 | Zinwell C band LNBF | $28 |
| Dual KU lnb holder adjustable | $20 | Zinwell Prime Focus KU Dual Output | $60 |
| 75cm KU offset dish | $30 | Star C band LNBF | $18 |
| 90cm KU offset dish | $35 | MTI one cable solution LNBF | $45 |
| One leg gutter mount | $18 | Satellite finder | $20 |
| Two leg gutter mount | $22 | Mobile Sat Ground Mount | $77 |
| Tin roof mount | $20 | RG6/RG11 crimper | $20 |
| Wall mount | $14 | Angle meter | $35 |
| 19" LCD Bracket | $40 | Compass High Quality | $10 |
| 2.3m SD mesh dish | $130 | RG 6 Crimp Connector 100 pack | $25 |
| 3m SD mesh dish | $340 | 22K switch | $10 |
| 3m HD mesh dish | $380 | Two way DiSEqC switch | $10 |
| 3" 2.5m galvanised pole | $30 | Four way DiSEqC switch | $12 |
| 3" 3m galvanised pole | $36 | Satellite 2 way splitter | $2.50 |
| 3" 3.5m galvanised pole | $42 | Satellite 4 Way split | $4.50 |
| 3" Tripod Mnt for C band dish | $30 | Digiair Terrestrial hand held meter | $350 |
| Speaker Stand for caravan use Ku dish | $40 | Star LED Easy to use Satellite Meter | $75 |

## This Months Specials

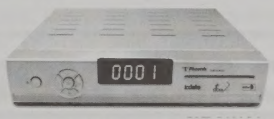


**Phoenix JT-3960A**
**Digital Terrestrial Receiver**
**$50.00ea 10 buy**

**Coship 5110D**
***Licenced irdeto 2 Sat Receiver***
***Auto rescan when powered up***

**New Star 2880C FTA Receiver**
**Blind Scan! $65 ea Min 5 Buy**

**Latest Release**
**Phoenix 1.8m**
**Solid 6 Piece Dish**
**C & KU Band**
**Polar Mount**
**$135.00**
**Yes You Can Motorise**




****New Phoenix 100-CA****
**Licenced Irdeto 2 Receiver**
**Suits all Irdeto 2 services inc Gamma Card**

**$95.00ea**
**Min 5 Buy**
**Special QTY Price Available Please call**

**Phoenix 3600C**
Latest Model to suit Selectv
Satellite & Terrestrial
Dual Tuner
Have Local Channels & Selectv all in one box
All at a new LOW Price
**$120.00 ea 6 buy**

**Phoenix 65cm**
**KU Dish**
**How low can they go?**
**$22.00ea**

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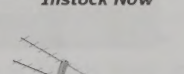
**Version 2.26D**
**$70.00 Trade**
**Price breaks in place for larger Wholesale Qty's**

**Latest Release**
**Licenced**
**Irdeto Dual cam**
**$120.00**

**Kingray MHW-34F**
**Inc Power supply**
**$50.00 *crazy***

**Highest Gain Televes**
**UHF Deep Fringe**
**Antennas**
***Instock Now***



**SATLOOK Digital NIT**
**$1395**

Satellite-receiver 920-2150 MHz.
- Spectrum-analyzer with expanded spectrum.
- Digital BER, QPSK and S/N-ratio.
- 4.5" B/W monitor for PAL/NTSC/SECAM.
- Tuneable sound 5.5 - 8.5 MHz.
- LNB voltage 13/18v. 22 kHz tone switch.
- DiSEqC control (1.0, 1.1, 1.2)
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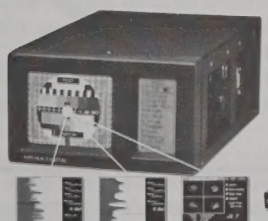
- Satellite identification.
- Symbol rate 1-30 Msymb/s.
- RS 232 for PC connection
- Built in, rechargeable battery.
- Only 5 kg complete with carrying-case.



**selectv**
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# LATEST RELEASE TECHNOLOGY

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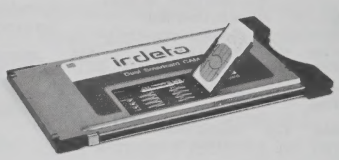
Irdeto 2 licenced
Very compact
Suits all Irdeto Pay TV services & Aurora
CVBS & Component outputs
Designed in Australia
Great for C-band Motorised, DiSEqC 1.0/1.2
Plays all Irdeto cards including *Gamma*

**Irdeto Licenced**

### Dual Irdeto Cam
### New to Australia/New Zealand

Irdeto 2 Licenced
This new unit fits in to your standard CI slot
Simply insert card number one in to the full size card slot and then cut the 2nd card down to suit the sim card holder (same as a mobile phone) then you may watch both Irdeto cards in the one cam, cutting template included.




# CALL NOW FOR LATEST PRICING

### Phoenix 3600C Dual Tuner
### Designed for Selectv

Watch Local Channels with your Selectv
This unit has one Satellite tuner &
one Terrestrial Tuner built in, simply place your Selectv card or *Gamma* card in the card slot and you have everthing in one STB
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Quetions and (some) Answers:

# 720p, 1080i and other new 'buzz' phrases

Bonner Martin (bonnermartin@entersurf.co.nz) has become one of several vocal television system designer practitioners questioning the Freeview (consortium) decision making terrestrial service a 720p standard here. But is it? In SatFACTS #159, Freeview's Steve Browning told us:

"Freeview terrestrial receivers (i.e. STBs) will be specified to decide SD and HD (including both 720p and 1080i). Each broadcaster will decide which resolution to use (there is no chosen standard and there is no need to do so)."

So contrary to early 'suggestions' pinpointing 720p as 'a standard' Browning is setting the record straight by assuring us each broadcaster will be able to set their own HD format, perhaps on a programme by programme basis. And, the terrestrial set-top boxes sold for approved Freeview use will include SD (576 lines interlaced), HD (720 lines progressively painted) and 1080i (1080 lines interlaced). What has not changed from the earlier announcement is only terrestrial reception sites will have access to HD; satellite Freeview receivers will have to get along with SD (see SatFACTS #159, page 6 for a detailed discussion).

Bonner Martin picks it up at this point:

"I recently inspected a Blu-Ray DVD demo on a 1080p 50" screen and within the demo DVD they showed the difference between 720p and 1080i using the same original source. Even with my less than perfect vision, the 1080i image had a great deal more detail (beyond that of the 720p comparison). The same display also allowed me to witness the difference between 1080i and 1080p. The DVD demonstrated an American baseball game, where the ball often travels at 160km/h and is a small object making its' proper resolution of most TV formats a non-starter.

"Another method of comparison involves long camera shots with a panning camera - the far side of the baseball park for example with the lens squeezed tight to pick out just a few people and then moving the camera sideways (panning). I consider catching the baseball in flight and the long crowd shots especially challenging although in a fast moving game like this there are ample other opportunities for HD to shine.

"The same scene was repeated three times on the DVD; one 720p, again on 1080i and then finally 1080p. There was significantly more detail with the 1080i and when all three were stacked up side by side across the screen (one-third each) it was only possible for me to differentiate the 1080i from the 1080p by a minute fine line separating the two.

"I cannot help but wonder if TVNZ is wrong in going with 720p rather than 1080i. I agree that it will suit the universe of 756p screens already in place and in the marketplace but is that not being short sighted to protect an inferior technology? Surely in five years time the 1080i and 1080p problems as they now present themselves will be resolved; will we, then, as a country be stuck with either another receiver replacement round or a less than world-class video image?"

The arguments at very high design engineering levels have been with us for nearly a decade. The one written report which has survived as a 'reference standard' was published in the EBU Review (January 26, 2005) and the technology from that critical assessment has not significantly changed. Bonner contacted the editorial staff of this publication and asked:

"I read with great interest Philip Laven's article on HDTV 720p and 1080i and note that Yves Faroudja comments that the conversion from interlace to progressive does not work well at the 1080 line level. Is there an update to this technical paper?"

The answer (from Mike Meyer, Editor for the EBU Technical Review) follows:

"I am afraid that, sadly, physics prevents us from making a perfect upconversion for 1080i to 1080p - as much as we would like to - as Yves Faroudja said.

"If you look at the spectrum of an Interlace signal in three dimensions: vertical, horizontal, and temporal, you will see that the top vertical/temporal quadrant is missing. The interlacing has thrown away this high vertical detail/high motion speed information; this being how it achieves a 50% reduction in bandwidth. (Editor's note: Interlacing consumes approximately half the mega-bandwidth of a progressive signal, both starting from the same input source). In the past this was a good idea and a very efficient thing to throw away, in the 'CRT age', because it does not make a large contribution to our perception of picture quality.

"Today, things are different - and that is the problem - the new age of flat panels and content adaptive digital compression requires new thinking. For those who started HDTV during the 'CRT age' - which likes Interlaced signals, this is a problem. We now use flat panels which are all progressively scanned, and the technology of content adaptive motion compensation in compression, and this process needs the 'missing information' to work best.

"Simply put, there is no way to recover the missing vertical/temporal information in an Interlaced signal. Once it is gone, it is gone. No amount of clever processing can bring it back. The Interlace to progressive converters can be bad or less bad, but they can never do a perfect job; and this was Yves' point.

"So, the 1080i signal does NOT have a resolution of 1080 by 1920, it has a resolution which is limited vertically by a phenomena known as incomplete field aliasing cancellation at the top end. And what is more, the resolution falls off with motion speed. *The faster the object moves, the less sharp the image!*

"Furthermore, I should say that in Europe more or less everyone who uses 1080i rolls back the horizontal resolution from 1920 to 1440 (as they do in Australia) to reduce the compression artefacts. So for a 720p signal you have a luminance pixel rate (this is the important thing) of 74.5 Mpixels/sec, and for Interlace you have a rate of about 56 Mpixels/sec - somewhat less.

"Plus - the 720p signal also has 'square pixels' - equal vertical and horizontal resolution. The 1080i has more horizontal resolution than vertical resolution, for one reason

being you need to multiply the number of lines by an 'interlace factor' which is a field rate dependent fraction.

"So you see that the static picture quality of a 720p signal is about the same as a 1080i signal, and the resolution of 720p when objects move is better. Please remember, then, that the simple calculation of number of lines times samples per line is not really the truth, and that perfect Interlace to Progressive conversion would require something of a miracle; a quality usually not found in consumer electronics.

"Sometimes broadcasters have other reasons for choosing 1080i - such as lower production equipment costs, and these may well be strong arguments, but I don't think there are any 'technical arguments of viewer quality'. Do you?"

Editor's footnote: Bonner in his original questions to the EBU folks pointed out a recent announcement from Panasonic concerning a new chip which they claim can hold (store) two full 1080i frames and then process that to 1080p. While this device might have some application to origin (transmission) end signal processing, the heart of issue boils down to Mike Meyer's insightful:

"Simply put, there is no way to recover the missing vertical/temporal information in an Interlaced signal. Once it is gone, it is gone. No amount of clever processing can bring it back."

Sometimes the most complex problems have the least complex answers. Our thanks to all involved for providing us with this quite brilliant education in a short span of space and time!

Is this piracy - or what???

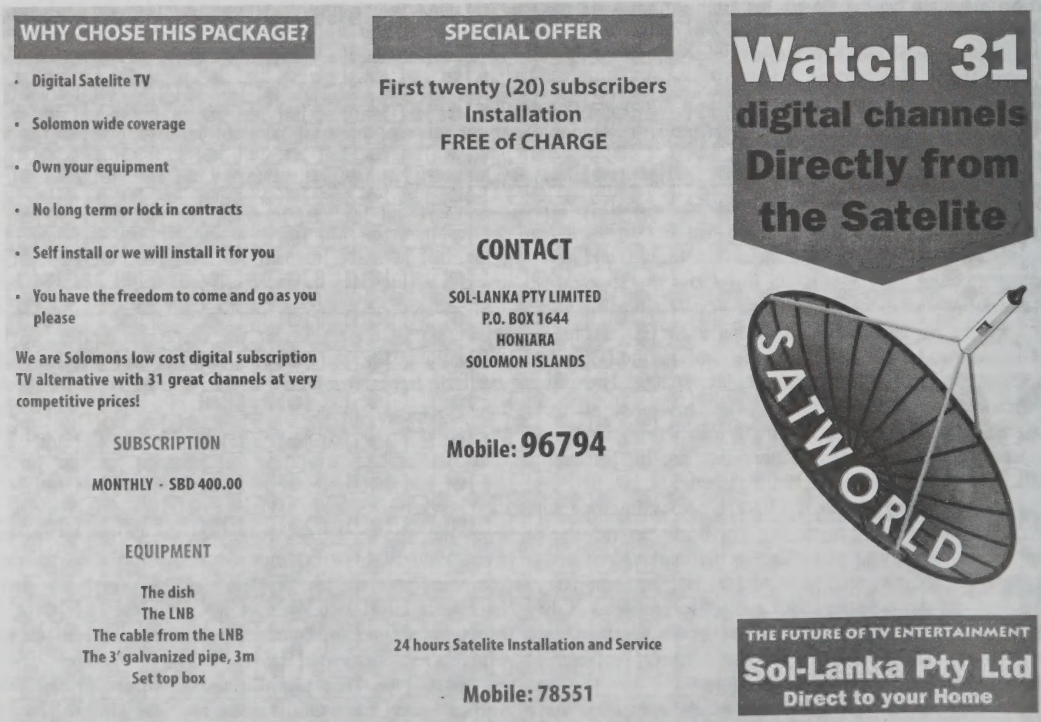
# Solomon Islands new 'King of TV'

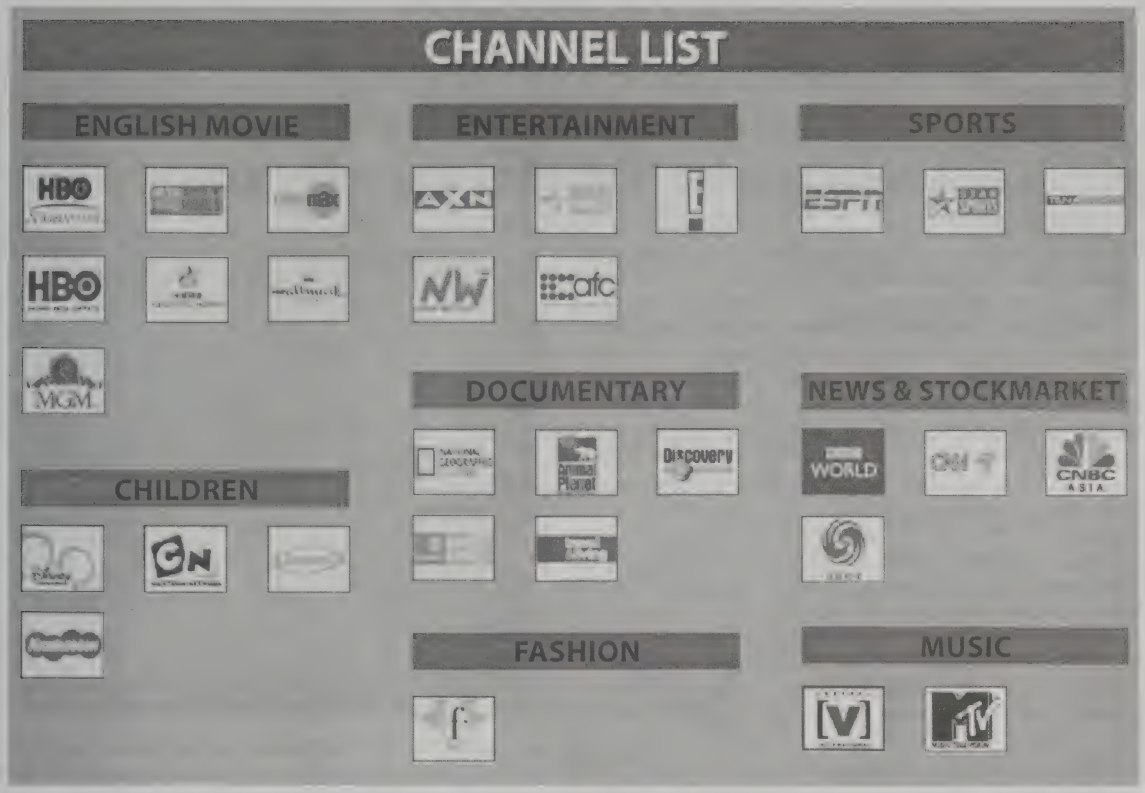
It began with a feature article appearing in the widely circulated "Island Business" magazine; the title - "Competition in the sky." And it began with an opening line certain to attract a reaction:

"Last Month a Solomon Islands businessman placed a colourful little insert advertisement in the Solomon Star newspaper. Then the phones started ringing. Call after call. Nearly 1000 calls in the first day, it is estimated."

The advertisement consisted of two sides (front is below; rear is on next page). The article continued: "Every call could be bad news for powerful Fiji Television's efforts to add Solomon Islands to countries where its subsidiary Sky Pacific dominates pay TV. The businessmen, Nihal Seneviratne, and his Satworld are providing something Fiji Television has faced little of so far. That's serious competition as it continues country-by-country launches of its Sky Pacific satellite-delivered international programming."

The advertisement offers "free installation" (not the same as free equipment installed) to "First twenty (20) subscribers." The 31 channel list appearing here (page nine) leaves little doubt - Nihal is selling S-Band systems from Indonesia. Problem one is of course Solomon Islands are not a part of the copyright-cleared zone which Indovision has






acquired from its programme providers. In other words, Satworld is extending Indovision coverage beyond its legal limits.

Is Fiji TV angry about this? They are but not out of fear of competition - rather it is a recently adopted tough stance on piracy after discovering some of their own authorised receivers in places such as (south) Auckland and Melbourne. The usual 'trick' for what Fiji TV terms 'pirates' but which you might simply call 'extended coverage' revolves around the not very secure plan of a home in Fiji with a local address subscribes for two (some have up to four) individual STBs and then a spare ends up being hand carried in luggage to "auntie's house" in a distant country.

This works - after a fashion - for a small quantity of travelling STBs but how Nihal Senevitatne plans to service "nearly 1000 calls the first day" is an interesting challenge. If one goes back say ten years or so to a period of time when Indonesian satellite television was distributed using Scientific-Atlanta B-Mac (analogue) addressable decoder-STB units, there was a period when for US$200-$400-$600 a "friendly" Indonesian native would subscribe for you, collect your money and then ship the decoder to your location. There were hundreds at one point in Australia using this 'system' - and the following routine developed.

1/ You located a willing native

2/ You sent money for the initial installation - using by telegraphic transfer

3/ You selected the service package you wished (the options were few but did include the Asian version of HBO movies and their companion Cinemax channel)

4/ And then the 'native' contact suggested you transfer money to pay for a complete year in advance.

This made excellent sense because otherwise there was the monthly hassle of doing it early enough to avoid having your decoder turned off for a few days or a week because of late payment.

This was where the native in Indonesia executed a sharp right turn. He took the distant subscriber's money, paid one or two months (at most) in advance and then disappeared (into the woodwork, so to speak) with the balance. He/she made money on the initial equipment 'purchase' and installation fee, but really scored when for US$500 he paid out perhaps $50 and pocketed the balance. Of course the subscriber in Sydney or Suva was left with no real way to force compliance.

Satworld is asking S$400 (US$55) per month for access to the 31 channels listed (above). As a matter of business, it is difficult to see how that can turn into a productive business venture unless the out-of-country cards are not being paid for in Indonesia.

Fiji's Sky Pacific meanwhile is having an interesting time of melding into its operation other areas in the Pacific. For example, there is Vava'u, in the Tonga group and to the north of Tongatapu and 'Eua where Sky Pacific is - perhaps without their full knowledge - providing service through a locally established terrestrial transmitter "pending availability of Television Tonga" from Nuku'alofa proper. The Fijian service has elected to expand into regions (such as Tonga or Solomon) 'one district at a time' and in the case of Solomon, through the local telephone company Solomon Telekom. The existing encryption system (Nagra2) has been widely 'hacked' in other parts of the world but there appears to be no underground in the Pacific taking advantage of that hacking procedure. In the present time frame, the only 'violations' of Fiji's 'copyright rules' appear to be those who pretend to live in Fiji but their card or box or both are actually someplace else.

# You possibly cannot afford it: Testing a SUPREME instrument

For as long as we care to remember, perhaps longer, Far North Cable TV has been hauling around a work horse terrestrial and satellite meter from Promax; the MC944. It shows signs of wear, and is possibly now inhabited by its third or fourth set of rechargeable batteries. It weighs 18 kilos and when you are crossing ditches, going up a hill on foot, or crawling under or through a fence to reach a point of measurement, we have been known to utter unprintable words of complaint.

The mediaMAX EVO weighs 3.9 kilos. It is all downhill from that point. Literally.

Satellite

There are (three) possible selection using the 'band' key on the smartly laid out operating surface which allow you to select satellite reception as one of the options. The MAX (we are going to shorten it to MAX from this point) has a menu under satellite through which you can order the meter's powering (13, 18 each with or without 22 KHz tone) LO (local oscillator). Once configured, the fun begins (not that setting it up is not fun).

Push "Spectrum", one of three bottom of control board buttons and instantly you have a display. At this point there are display-bandwidth options (7 in all from 'full' through 500, 200, 100, 50, 20 or 10 - those are megahertz of 'display window'). A 27 MHz wide transponder, for example, would be pretty useless if the full 5" screen was set to display a 10 MHz width; but if you were doing the FM broadcast band, 10 might be a choice (20 would be better as FM roams from 88 to 108 MHz).

MAX uses an internal marker system - a red line appears on the screen and this vertical line moves when you rotate the large knurled knob on the far right of the device. When the marker moves, the display advises you of (1) the frequency where the marker sits, (2) the signal level (in previously selected units) at that point. And when you have centre-tuned (to the middle of a ) transponder the screen livens up with

additional information including (at your option) the symbol rate and carrier to noise ratio. So back up a step to fully understand what is happening here.

1/ Having selected a service (satellite) and a display width,

2/ the screen depicts all of the signals present.

3/ Using the marker (call it a 'pointer') you select a specific segment of the display, and,

4/ the instrument's screen tells you all there is to know about that point in the displayed spectrum.

There is 'default' to a factory entered 'standard' for each band and a host of user entered variables. Moreover there are memory positions where specific measurements can be recorded for later recall.

The instrument slides from Terrestrial to Cable to Satellite using the band select button. If you switch from say Satellite to Terrestrial, by leaving Satellite the last selected set-up positions are retained for recall. This makes terrestrial to

Fte's mediaMAXEVO short form

The opening line in this instrument's printed manual states: "The mediaMAX EVO is the first measurement device of the new advanced generation of maximal field strength meters." This may be a classic understatement. It will tune in any signal between 5 and 862 MHz and 900-2150 MHz. This includes terrestrial analogue (including the FM broadcast band) and terrestrial digital, satellite (L-band) analogue and digital. Digital signals created following international standards (such as MPEG-2) can be demodulated as long as they are free-to-air allowing both analogue and digital to appear on a richly-bright 5" TFT display screen. The screen is your surveillance tool - you select the image (with companion sound in both analogue and terrestrial), you select the spectrum display (showing band segments as small as 10 MHz or as wide as 500 MHz), you select the measurement display (a specific signal level reading in dBuV, dBmV, 0 dBm units user adjustable from as low as 20 dBuV - terrestrial; satellite 30 dBuV - to a maximum of 125 dBuV). You can select any one of these (plus others to be described) or virtually any combination of two (such as spectrum display and actual signal level to the nearest extrapolated 0.1 dB). Powering comes from a wide range (100-240VAC) power adapter which creates 20VDC, or from an internal 90W/hour Li-ion battery; the meter will operate for approximately 4.5 hours using the battery (less if also powering LNB/LNC devices) and requires from dead-charge to full around 5 hours of bench time. The meter can be charging and be used simultaneously with the AC adapter although the charge time will be increased. The state of charge can be displayed continually on the screen. And that is but the barest beginning. Oh yes, it costs A$4,000 ex GST and would make an incredible Christmas Gift if you are on speaking terms with Santa Claus.

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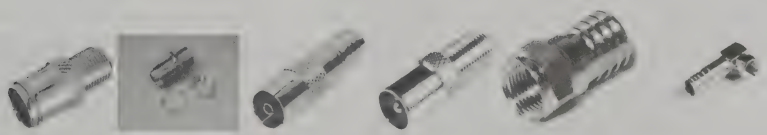

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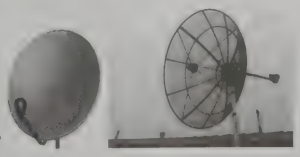

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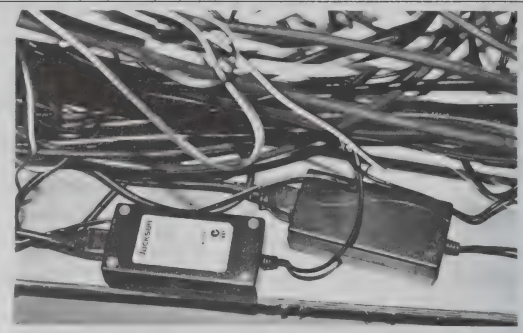
One for the books

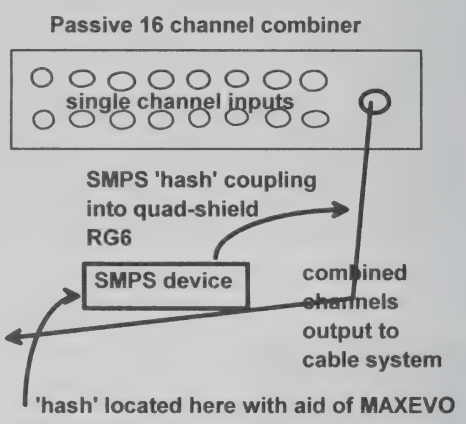
Coop's cable TV system, now relegated to being a test bed for new technology and hardware, consists of 34km of buried .500/.540 hardline cable supported by 50-550 MHz amplifiers, passive components and 70VAC power supplies. On November 25 the local power company did a planned 9 hour power cut shutting down all electricity in a 40km radius of us. What happens to hundreds of electricity fired devices which have been running for as long as 12 years without being shut down save the occasional 1 to 2 hour period, during an extended shut down, is problematical. After 100,000 hours of functioning, cold solder joints held together only by the heat (which evaporates in a 9 hour shut off) are legendary.

Several of the more recently added FTA receivers (for Freeview service on cable) are 12VDC operated and have their individual SMPS power sources. In restarting the cable service one of these boxes was physically moved to a new location; an unfortunate decision which seemed harmless at the time. *It was not.*

The new location was directly on top of the cable system's final (passive) channel combiner which allowed broadband noise generated by the SMPS to radiate-couple from the its non-shielded plastic case into several lengths of quad shield RG6 running all around it. This in turn passively 'added' the SMPS noise to the master cable output feeding the 34km of cable system. Herringbone lines, 'modulated' by the inherently unstable operation of the SMPS appeared over several dozen cable channels. To locate the source we pressed the spectrum analyser mode of the MAXEVO into service, using a short link of RG6 as an antenna 'sensing' device (see right). And this warning - ANY of the SMPS supplies can (will) generate unwanted RF 'hash' over a wide and usually unpredictable range of frequencies - typically above 30 MHz concentrated around 100 MHz but easily to 900 MHz.



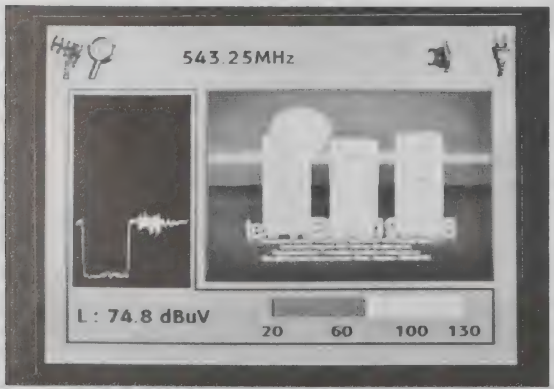
SMPS supplies reinstalled far away from cable lines which could pick-up their interference.


Passive 16 channel combiner
single channel inputs
SMPS 'hash' coupling into quad-shield RG6
SMPS device
combined channels output to cable system
'hash' located here with aid of MAXEVO

satellite and return pretty seamless; the one not in use (as long as the battery charge is not emptied) simply goes to sleep until you return to that band.

But there are initial caveats (warnings). The translated-from-Spanish operations manual leaves quite a bit to be desired as we found out quickly. Entering the usual and required satellite numbers got us a spectrum display but no (as promised) "first FTA MPEG-2 transponder image." This is where the manual fails (or at least our reading of it failed) and you start from scratch to figure out how the thing works! There are numerous menus buried inside this machine and once you have reached as far as displaying a spectrum (not difficult) in any mode (such as terrestrial by simply connecting a suitable 75 ohm antenna lead), stop. Make that STOP!

Now go button by button through all of the menu options. Here you will learn that before a satellite signal can be demodulated, even after being located with the moving pointer and displaying all of those great numbers, the meter has to be told what to do next. There are, for example, menu selected options between analogue and digital - the meter being peaked on a satellite signal needs to be told what the signal's parameters are (including 'Digital' and 'Symbol Rate') before you can press the TV image button and actually see something. This is a one-time-learn and remember adjustment which



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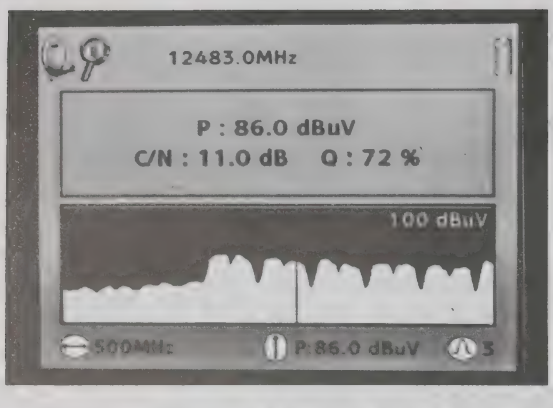


Satellite use: Obtaining a spectrum span is relatively straight forward once you have selected satellite and the appropriate LNB local oscillator data. A red 'Unical' marker driven by the tuning knob selects an appropriate carrier (left) while software adds individual parameters (FTA and CA) to the display (right).

becomes a part of your own learning curve. If you start with terrestrial, the same selection process is initially required only it will be 'analogue' if in fact it is - or digital for DVB-T. This instrument does so many different things that a totally smart machine capable of determining all of the operating parameters and creating an image (with companion audio) is apparently just one step too far. Again, this is not the meter's fault - it is your learning curve challenge and nothing more.

Think of this first as a spectrum analyser which can intercept and display on the 5" TFT any bandwidth from 10 MHz to 500(+) MHz over a signal range delivered to the input F fitting between 20 dBuV (terrestrial; 30 dBuV satellite) and 3 volts RMS (+130 dBuV). And anyplace from 5 MHz to 860 MHz and after a brief hiatus 900 to 2150 MHz. Once you have that display, the meter will 'autorange' to select the appropriate 'dB of height' on display; if the strongest signal is +83 dBuV the meter will self-adjust to +90 or +100 at the top of the screen.

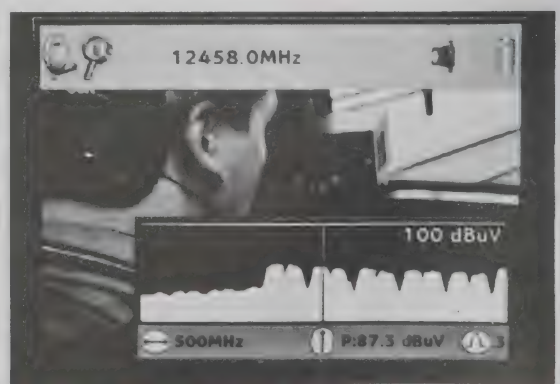
In most wider view bandwidths (user adjustable on the front panel) there will be a number of carriers displayed - such as by tuning the local terrestrial TV band, each TV carrier (analogue plus digital) will appear as a 'spike' on the display. On the right hand side of the meter there appears a knurled knob; it cannot be mistaken for anything else. Gently rotate the knob and a red permanent line (called the Unical Marker - think of it as a pointer) moves. At the same time on the top of the display screen, above the spectrum display, there will be numbers, changing as you turn the knob. One of these will be the frequency of the unical pointer, tuning in for example 12.483 GHz (in the satellite format) will get you to (NZ) Freeview transponder 12. Alternately, if you have begun in terrestrial and see a carrier that turns out to be on 55.25 MHz after positioning the red Unical marker on top of the peak carrier point, (NZ) TV channel 2 has been located.

The meter not only autoranges (finding the best input attenuator to maximise the display) but it autocalculates. What? On terrestrial it will tell you the signal level (in dBuV, dBmV or dBm units as you have directed), on a satellite signal the carrier to noise (C/NR).

Both satellite and terrestrial allow you to power an external device - LNB in satellite, masthead amplifier in terrestrial. In satellite the voltages available are 13 and 18, as well as 13 + 22KHz and 18 + 22KHz (DiSEqC 1.2 available). The external powering is limited to 450 mA short circuit protection. In terrestrial there is a 5V option. There will possibly be some terrestrial external amplifiers which will require a work around to power while using the EVO.

Now to the image. There is more to watching a TV image than the image itself - once you get there a new set of

Satellites: Further software selection adds information about the actual demodulated service (FTA only - and in a multiplex of many services, only the first channel) - left. Display provides control of many viewing and listening functions and (right, upper corner of display) 'battery status' indicator.



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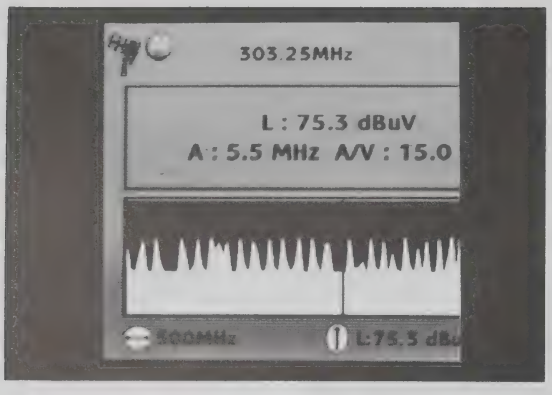
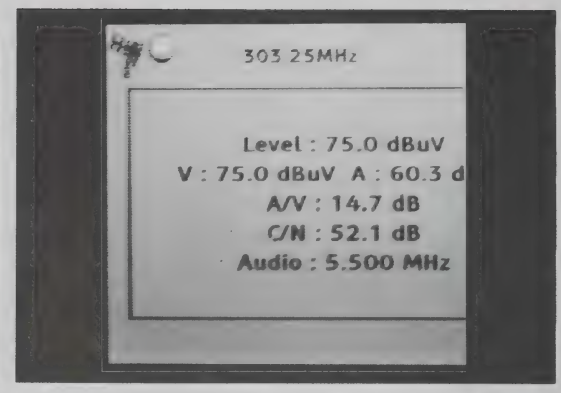
Email: sales@dtvs.co.nz Web: www.dtvs.co.nz




Terrestrial: First our apology for the 'partial' images - our fault, not a meter issue. The difference between terrestrial and cable is minor - cable adds pre-programmed coverage of spectrum chunks not normally associated with over the air TV. Dial up the spectrum desired, move Unical to the selected carrier and read the parameters (left). Further info is a button push away - including C/N and video to audio carrier ratio (-14.7, right, above).

measurements appear. For satellite, once you locate and direct the meter to 'digital reception' the EVO demodulates the first FTA service on a transponder (this can be on a transponder that is all FTA, or one that is mixed CA and FTA) and new data appears with selection of the appropriate ('meter') button. That includes the services ID name, the video and audio PIDs, and the signal 'quality'.

For terrestrial (or cable which is actually nothing more than 'high density' terrestrial) individual TV channels are supported with the signal level, the signal to noise ratio, the aural carrier level and we are told, if you are very clever, the modulation percentage of the aural carrier.

Saving for reference:

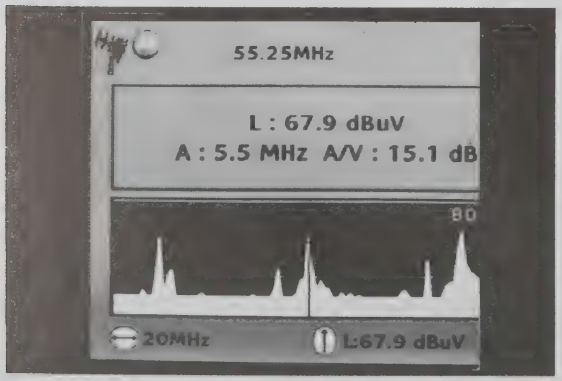
In an increasingly complex world where clients are quick to say things such as "The reception is not as good as it was (last week, last month, last year - fill in the blank)" plus the rapid development of SMATV-MATV systems for commercial accounts, the ability to go back and locate an actual record of specific segments of a system's performance becomes important. EVO can do this although in our limited meter-time-available (as on quick loan from source supplier aDigitalife) there was inadequate time for a thorough exploration of this feature. Each time you have something displayed on the screen, from wideband spectrum analysis to individual channel video display, it can be saved in one of the 1,000 memory recall positions (with the capacity to hold 4,000 separate measurement events). Programs (memories) can be modified, deleted, expanded or sent to a PC using the USB connection. They can also be entered into a shortform quick-locate memory under 'FAVorites'. Which makes the EVO as expandable as future software writers can dream.

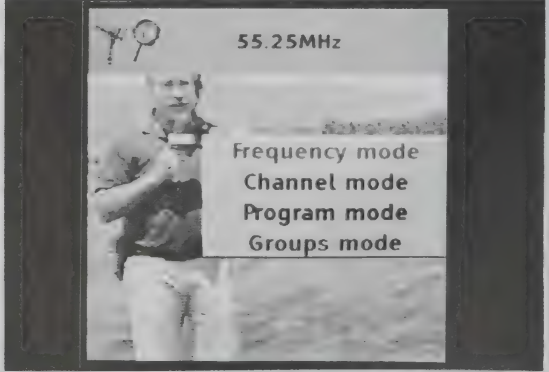
And that is but the launch point:

A device as complex as this is no toy and anyone serious about the ability to get the last dB out of anything will find it an attractive purchase. It should be noted that ultimate accuracy is quoted as "+/- 1.5 dB" which is state-of-art for a non-laboratory bench machine. There is a warning: this is a serious machine which nobody but its' creators could 'plug and play'. The Australian source for the meter, Jason at aDigitalife, commented that after weeks of 'play and use' time he was still discovering new features. So a suggestion: Someone should be a DVD that starts with unpacking the unit from the box and ends with a full and complete step by step set of hands on demonstrations - what to do, and how. This one is a winner but it also is stubborn about giving up its' secrets!

An even newer version, the EVO S2, is about to be introduced and we give you a heads up on how it differs from "1" on page 4 here.

Terrestrial: By reducing the span (20 MHz here on left; see button lower left on display) a closer look at fewer TV carriers (a 10 MHz span width is the smallest increment). Again, button push away once meter has been told 'analogue' a display of the actual received transmission - in colour. Menu offers control of display parameters.



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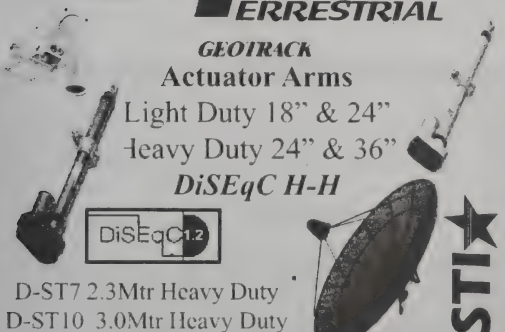


D-ST7 2.3Mtr Heavy Duty
D-ST10 3.0Mtr Heavy Duty

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# Satellite Interference Filters

***Eliminate out-of-band interference at your C-band receive antenna! Available for all international bands.***

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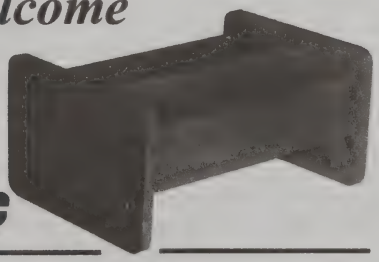


## MICROWAVE FILTER COMPANY, INC.

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**E-Mail: mfcsales@microwavefilter.com**

**Web:**

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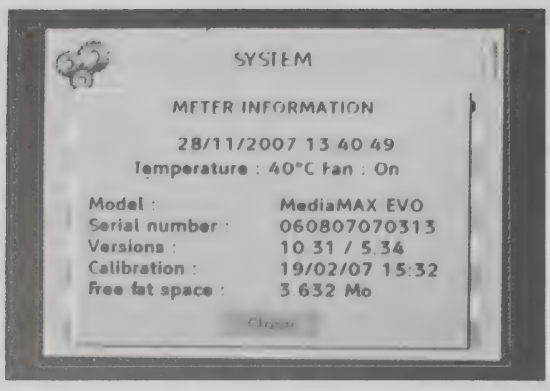
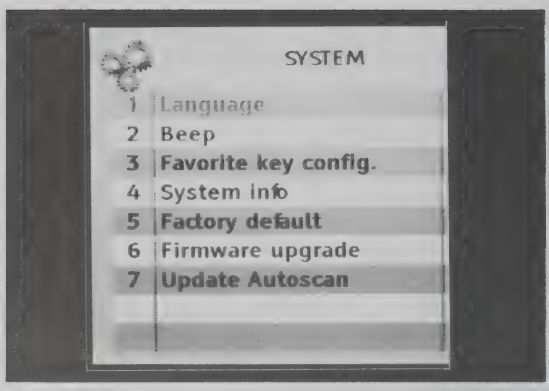

SYSTEM
METER INFORMATION
28/11/2007 13 40 49
Temperature : 40°C Fan : On
Model : MediaMAX EVO
Serial number : 060807070313
Versions : 10 31 / 5.34
Calibration : 19/02/07 15:32
Free fat space : 3.632 Mo




The machine: As nice as the 'mechanics' (including physical size and 3.9 kg weight) might be, the big bucks are really going for the software. Updating is on-going and transitions from meter to external devices (such as the home PC) is an important part of the advance planning here.

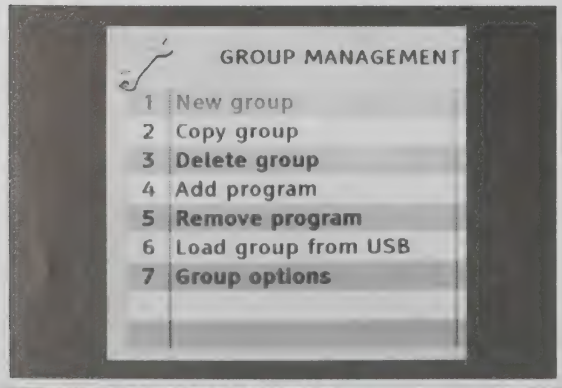
## mediaMAX EVO Technical Specifications

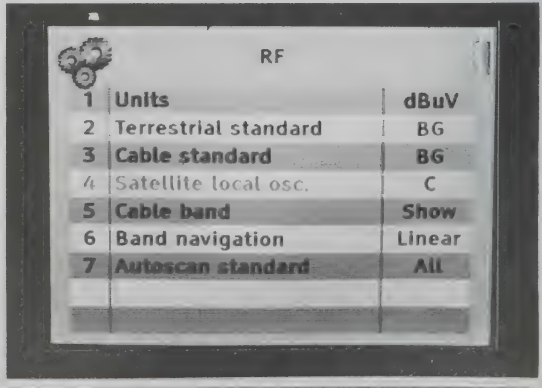
Spectrum: 5-47/47-860/ 900-2150 MHz
Tuning: Continuous in band
Tuning steps: 50KHz (terrestrial), 500KHz (satellite)
Display Mode: Horizontal sweep, logarithmic amplitude
Display span/width: full, 500, 200, 100, 50, 20, 10 MHz
Adjustable marker: Knob controlled Unical
Resolution filters: 2, 2 MHz; 200KHz
Level range: 0-60dB auto ranging attenuator, from 20 dBuV (terrestrial) and 30 dBuV satellite to 130 dBuV
Channel plans: B/G, L/L, D/K/K, I, M/N + cable TV + C and Ku satellite with FM 88-108 MHz
Colour standards: PAL, SECAM, NTSC
Display: 5" TFT, menu driven settings
Sound: Internal speaker, 1W amplifier
Selectable: All terrestrial audio offsets + satellite analogue 5-9 MHz tuneable

Memory Programs: up to 1,000 programs (groups of measurements designated for memory) can be saved, containing up to 4,000 individual measurements. Data saved includes level measurements spectrum display and syncro pulse.

Downloading data: All values can be downloaded through meter's USB port.
Auxiliary input/output(s): A/V minijack connecting to external monitor or external source to use meter's TFT and speaker for display. RS-232 serial port for PC connection; USB host driver (USB 2.0).
Power: Litho-Ion (90W/hour) - 5 hour charge from empty, 4.5 hour use from full (without LNB/C in use); companion 100-240VAC mains supply 20VDC/2.5A.
Protection: +/-50VDC as applied to input (female F adapter); 3V RMS (+130 dBuV).
Operations: Extensive dependency upon in-built menus not all of which are obvious from the provided manual; a strong dose of common sense including familiarity with various set-up routines for satellite and terrestrial STBs is highly recommended.
Size: 280 x 130 x 220mm 'naked' (+protective bag)
Weight: 3.9 kilograms
Overall impressions: An incredibly versatile device but a 'work-in-progress' with perhaps the best software yet to come.
Source: **ADIGITALIFE P/L**, Factory 11/657 Pine Ridge Rd, Labrador Qld 4216 ++61 7 55632055 and www.adigitalife.com

The machine: Consider this. For the price of a modern meter you are also heading for an extensive home course in digital (and analogue) signal reception techniques and the underpinning technology. The manual, all 67 pages, is quite frankly not much help. Our suggestion - read it, turn the meter on (it **will** get you that far) and then close the door and hibernate. Two or three days of pushing buttons and drinking beer should do it.



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| Frequency Range | 5-820Mhz and 900Mhz-2150Mhz |
| Analog Measurements | Power Level, CNR (AM and FM), V/A |
| Digital Measurements | Channel Power, CNR, BER, MER (COFDM, QPSK, QAM) |
| Units of Measurements | dBm, dBmV, dBuV selectable by user |
| MPEG-2 Decoder | Yes, Embedded |
| Data-Logger | Yes, Also Captures MPEG picture to USB stick |
| Constellation Diagram | Yes, for QAM |
| Sat Finder | Yes, with NID detection |
| Upgradeable Software | Yes, by RS232 and USB 2.0 |
| Screen | Colour TFT 5" High Resolution<br>Can View Spectrum, Picture and Measurements on 1 screen |
| Battery | Lithion Ion |
| Weight | 4kG |

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# SatFACTS Pacific/Asian MPEG-2 Digital Watch: 15 Dec, 2007

| Bird | Service | RF/IF &Polarity | # Program Channels | FEC | Msym | Receivers and Errata |
|---|---|---|---|---|---|---|
| Thcm5/78.5 | SkyChAust | 3695/1455H | up to 3 | 3/4 | 5( 000) | CA (#1, 3), FTA audio #2 |
| | **ANT Greece** | 3672/1478H | 1 TV | 3/4 | 13( 333) | Late July 04 room for more (FTA) |
| | **TARBS ME mux** | 3640/1510H | 12TV, 12 radio | 2/3 | 28( 066) | CA + 23FTA(A1TV, IRB3, Visjon Norge,Pakistan) |
| | **Ch Nepal** | 3626/1524V | 1 | 3/4 | 15( 556) | New 03/03, FTA |
| | **Mahar mux** | 3600/1550H | 11TV, 1 rad | 3/4 | 26( 667) | Thai + Indian services, FTA inc. Vibe TV, Sindh TV |
| | **RR Sat mux** | 3551/1600H | 8TV,10 radio | 3/4 | 13( 333) | 3TV, 5radio inc Hellas TV Greece FTA |
| | **TVK Cambodia** | 3448/1702H | 1TV | 1/2 | 6( 312) | **FTA** |
| | **TARBS/Th5** | 3480/1670H | 12 TV+radio | 2/3 | 26( 667) | **3FTA** TV5, VTV4, ATN Bangla |
| | **Thai Global** | 3425/1725V | up to 7? | 2/3 | 27( 500) | FTA (reaches SE Australia) |
| InSat 2E/83 | **ETV mux** | 4005/1145V | 6+ TV | 3/4 | 27( 000) | Several ETV now here, wide beam |
| | **Hyd Dig 2E** | 3910/1240V | 1 | 3/4 | 5( 000) | SCPC, OK E Aust wide beam |
| | **Kairali TV** | 3699/1451V | 1 | 3/4 | 3( 184) | SCPC, OK E Aust wide beam |
| | **Indian mux** | 3643/1507V | 3 | 3/4 | 19( 531) | corrections 12/02 |
| | **Sky Bangla** | 3430/1720V | 1TV | 3/4 | 6( 000) | New - November 2002 |
| NSS6/95E | Ant Pac (Greek) | 11 104H-Australia | 1 TV | 3/4 | 2( 800) | Now CA, was 11 083H |
| As2/100.5E | **Guangdong TV** | 4075/1075H | 1TV + radio | 3/4 | 6( 000) | July 04 FTA |
| | **Euro Bouqt** | 4000/1150H | 5TV, 19 radio | 3/4 | 28( 125) | FTA TV + radio, LUXE TV HD here |
| | SatLink | 3960/1190H | 3TV | 3/4 | 27( 500) | (Real Madrid left July 2007) |
| | Reuters News | 3905/1245H | 1TV | 3/4 | 4( 000) | Was 3923H, sometimes **FTA** |
| | **WorldNet** | 3880/1270H | 4+/18radio | 1/2 | 20( 400) | FTA, multiple audio services V2360, A2320 |
| | APTN Asia | 3799/1351H | 1 | 3/4 | 5( 632) | Sometimes **FTA**, also 3895Vt |
| | Reuters/Sing | 3775/1375H | 1 | 3/4 | 5( 631) | **FTA** & CA |
| | Macau MUX | 4148/1002V | 5TV | 3/4 | 11( 850) | 5 chs TV, FTA, some tests |
| | **Dubai MUX** | 4020/1430V | 4+, radio | 3/4 | 27( 500) | FTA , Dubai Sports Ch some English, soccer |
| | **Russian/Israel** | 3832/1318V | up to 4 video | 3/4 | 7( 271) | Two Israel, two Russian (REN-TV) |
| | **ArabSat#2** | 3820/1330V | 8+ video? | 3/4 | 27 5 | New 07-06, 10 FTA here |
| | **Trace TV** | 3792/1358V | 1 | 3/4 | 2( 400) | new here Dec 2004, Euro-French music videos |
| | **BYU-TV** | 3767/1383V | 1 + 20 audio | 1/2 | 6( 530) | Increased coverage; great variety audio chs(03-05) |
| | **3-ch miniMUX** | 3752/1398V | up to 3 | 3/4 | 5( 640) | Sun-TV, Surya TV, KTV (FTA) |
| | **Saudi TV1** | 3660/1490V | 7+/tests | 3/4 | 27( 500) | FTA MCPC; Yemen, MBC EUROsport tests |
| Express2/103E | **Various-tests** | 3675/1475R | 2 | 3/4 | 4( 340) | Now loaded from 96.5E; svrl below 3900 all RHC |
| As3S/105E | **Chinese regionals** | 3671/1471V | 2 | 3/4 | 8( 932) | New 07-06; Yanbian, Jilin Satellite TV |
| | **CETV digital** | 3680/1470H | 1+ TV | 3/4 | 26( 670) | replaces analogue same freq, V33, A32 |
| | Zee bouquet | 3700/1450V | 10TV | 3/4 | 27( 500) | Now SECA 2 CA (10-04); Radio Aust. Eng A2011 |
| | **Ch News Asia** | 3706/1444H | 1TV (+) | 3/4 | 6( 000) | English + V1160, A1120, 525, 625 versions |
| | **Azio TV** | 3716/1434H | 1TV (+) | 3/4 | 7( 000) | Was parallel to 3640Hz analogue (now gone) |
| | **TVB 8** | 3729/1421H | 1TV | 3/4 | 13( 650) | |
| | Zee Movies | 3732/1418V | 3TV | 3/4 | 6( 500) | Conax CA, all Hindi films |
| | **TV One** | 3739/1411V | 1TV | 3/4 | 2( 8934 | Also reported 3.333, ¾ October 2005 |
| | **SAB TV** | 3743/2407V | 1TV | 3/4 | 3( 300) | SAB may no longer here here, moved to NSS-6? |
| | **Fashion TV** | 3747/1403V | 1TV | 3/4 | 2( 625) | new frequency October 2005 |
| | **AAJ-TV** | 3750/1400V | 1TV | 3/4 | 2( 820) | New April 2005; English, urdu |
| | **Arirang TV** | 3755/1395V | 1 | 7/8 | 4( 418) | FTA SCPC; New PIDs V3601, A3606 June 2003 |
| | **Now TV +** | 3760/1390H | up to 10TV | 7/8 | 26( 000) | CA + 10 **FTA**; DW, TV5, Al Jazeera English |
| | Star TV | 3780/1370V | 7(+)TV | 3/4 | 28( 100) | NDS CA (Pace DVS211, Zenith) |
| | **Pakistan** | 3786/1364H | 2TV | 3/4 | 5( 700) | Was 3647V; TV One & Waseb TV |
| | **GXTV** | 3806/1344V | 1TV + 3 radio | 3/4 | 4( 420) | Guangxi TV; was As2 |
| | **Shaanxi TV** | 3813/1337V | 1TV + 2 radio | 3/4 | 4( 420) | Was As2 |
| | **Anhui TV** | 3820/1330V | 1TV + 2 radio | 3/4 | 4( 420) | Was As2 |
| | **Jiangsu TV** | 3827/1330V | 1TV + 2 radio | 3/4 | 4( 420) | Was As2 |
| | **HLITV** | 3834/1316V | 1TV | 3/4 | 4( 420) | Was As2; HeiLong |
| | Star TV | 3840/1310H | 7(+) TV | 7/8 | 26( 850) | NDS CA (Pace DVS211, Zenith) |
| | Star TV | 3860/1290V | 5(+)TV | 3/4 | 27(500) | NDS CA (Pace DVS211, Zenith) |
| | **Dragon TV** | 3886/1264V | 1 TV | 3/4 | 4( 800) | Shanghai |
| | **Shaandong** | 3895/1255V | 1TV + 6 radio | 3/4 | 6( 813) | Apparently Mongolia |
| | **CCTV1** | 3904/1246V | 1TV, 1 radio | 7/8 | 4( 420) | |
| | **Jilin TV** | 3914/1236V | 1TV + 2 radio | 3/4 | 4( 420) | |
| | Star TV | 3920/1230H | 4+ TV | 7/8 | 26( 850) | |
| | CNNI | 3960/1190H | 8TV, 1 radio | 3/4 | 27(500) | PowVu CA; new SR Apr 29; CNN radio **FTA** |
| | StarTV | 3980/1170V | 6+TV | 3/4 | 28( 100) | NDS CA, Star News India **FTA** VPID 514, APID 648 |
| | **Star TV** | 4000/1150H | 8(+)TV | 7/8 | 26( 850) | NDS CA w/ **4(Chinese) FTA** |
| | **Sahara digital** | 4020/1130V | 8TV, 1 radio | 3/4 | 27( 250) | New Sr September 2004 |
| | **Hubei TV** | 4035/1115H | 1TV + 2 radio | 3/4 | 4( 420) | Was As2 |
| | **Tianjin TV** | 4046/1104V | 1TV + 2 radio | 3/4 | 5( 950) | new December 2004 |
| | **Sichuan TV** | 4051/1099H | 1TV + 1 radio | 3/4 | 4( 420) | Was As2 |
| | **Qinghai TV** | 4067/1083H | 1TV + 2 radio | 3/4 | 4( 420) | Was As2 |
| | **Hunan TV** | 4082/1068H | 1TV + 1 radio | 3/4 | 4( 420) | Was As2 |
| | **Fashion/HK-Asia** | 4088/1062H | 1TV | 3/4 | 2( 626) | New July 2005 |
| | **Pakistani TV** | 4091/1059V | 4TV, 1 radio | 3/4 | 9( 330) | new Sr, channels, April 2006 |
| | **Sun TV** | 4095/1055H | 1 | 3/4 | 5( 554) | "History Channel" - SCPC, some English |
| | **PTV National** | 4106//1044V | 1TV, 1 radio | 3/4 | 3( 333) | |
| | TVB8 Mux | 4111/1040H | 4 TV | 3/4 | 13( 650) | MATV Ch Movies now Irdeto 1 |
| | **Indus News** | 4115/1035V | 1 | 3/4 | 3( 331) | Hindi (+ "Plus"), day parts |
| | **CCTV bqt** | 4129/1021H | 4 TV, 4 radio | 3/4 | 13( 240) | moved from 4115 |
| | Zee Bqt #2 | 4140/1010V | 8(+) TV | 3/4 | 27( 500) | Now SECA 2 CA (10-04), 1 occ FTA (varies) |
| | **Henan TV** | 4166/984V | 1TV + 8 radio | 3/4 | 4( 420) | Was As2 |
| | **Fujian TV** | 4180/970V | 1TV + 2 radio | 3/4 | 4( 420) | Was As2 |
| | **Jiangxi TV** | 4187/963V | 1TV + 2 radio | 3/4 | 4( 420) | Was As2 |
| | **Liaoning TV** | 4194/956V | 1TV + 2 radio | 3/4 | 4( 420) | Was As2 |
| Cak1/107.5 | Indovision (S-band) | 2 535, 2 565, 2 595, 2.625, 2.655 | 33(+) TV | 7/8 | 20( 000) | NDS CA using RCA/Thomson. Pace IRDs, **2.535 has 2 FTA.** Bird now inclined |
| T`Kom/108E | **IndoBqt** | 3460/1690H | up to 6 | 3/4 | 28( 000) | also 3586H/17 500, 3496H/19 615 |
| C2M/113E | **TPI** | 4185/965V | 1 | 3/4 | 6( 700) | FTA SCPA; NT/NC only |
| | **Anteve** | 4144/1006V | 1 | 3/4 | 6( 510) | change from 4055V, FTA SCPC |
| | Kabelvision Mux | 4080/1070H | 7+ TV | 7/8 | 28( 125) | also try 3500H, 27 000, 3/4, strong NZ |
| | Indostar | 4074/1076V | 1 | 3/4 | 6( 500) | New (but probably temporary) 07-06 |
| | SCTV | 3934/1216H | 1 | 3/4 | 6( 620) | **FTA,** may not be active full time |
| | Indo MUX | 3880/1270H | 3+ TV | 7/8 | 28( 121) | **FTA;** Sr change 01/03; erratic |
| | KBS World | 3838/1312V | 1TV | | 2( 100) | New August 2007, note low res rate |
| | TVRI | 3765/1385H | 1TV | 3/4 | 5( 555) | bounces btwn FTA and CA; unreliable (12-04) |

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| Bird | Service | RF/IF & Polarity | # Program Channels | FEC | Msym |
|---|---|---|---|---|---|
| | SCTV | 3726/1424V | 1TV | 3/4 | 6( 620) |
| | RCTI | 3473/1677H | 2 | 3/4 | 8( 000) |
| C6B/115 | See | SF#156 | p. 29 | for interim | update |
| As4/122E | CCTV MCPC | 3820/1330V | 8 | 3/4 | 27( 500) |
| Sin3/125 | Tests | 3989/1161H | 1 | 3/4 | 9(073) |
| Jc3/128 | Miracle Net | 3996/1154V | 3 up to 6 | 5/6 | 22( 000) |
| | Asian bqt | 3960/1190V | up to 8 | 7/8 | 30( 000) |
| Ap6134E | Multiple | 4140/1010V | up to 8 | 7/8 | 27( 500) |
| T18/138 | Tests | 3460/1690V | 8 | 3/4 | 30( 000) |
| Am3/140 | STS + | 3731/1419R | 1 | 3/4 | 3( 200) |
| Jc2A 154 | BYU-TV | 3915/1245V | 1+ 20 languages | 3/4 | 4( 166) (?) |
| MeasSs2 | Astro Mux | 11 602H | up to 17TV | 3/4 | 41( 500) |
| B3/152 | 7 Cent. Feed | 12 310H | 1TV | 3/4 | 5( 100) |
| | AuroraBiz | 12 407V | 4 TV, 10 radio | 2/3 | 30( 000) |
| | UBI | 12 425V | up to 13 TV + radio | 3/4 | 22( 500) |
| | Globecast 2 | 12 525V | 13 TV, 8 radio | 2/3 | 30( 000) |
| | Globecast (feeds) | 12 550- 555V | 1TV | ¾ & 2/3 | 6( 110/.670) |
| | Globecast | 12 564V/T13 | 2+ TV | 2/3 | 30( 000) |
| | UBI | 12 613H/T14L | 11+TV | 3/4 | 22( 500) |
| | UBI | 12 640H/T14U | 11+TV | 3/4 | 22( 500) |
| | Globecast 1 | 12 658V/T7 | 14TV, 15 radio | 2/3 | 30( 000) |
| | UBI | 12 674H/T15L | 11+TV | 3/4 | 22( 500) |
| | UBI | 12 701H/T15U | 11+TV | 3/4 | 22( 500) |
| | WA ABC | 12 702V | 1 TV, 1 radio | 7/8 | 14( 288) |
| | WA SBS | 12 720V | 4TV, 2 radio | 5/6 | 12( 600) |
| | WA GWN/WIN | 12 738V | 2TV | 7/8 | 14( 295) |
| C1/156E | Aurora | 12 324V/T1U | | | |
| | Pay TV | 12 365V/T2 | 11TV, 2 radio | 3/4 | 27( 800) |
| | Aurora Home | 12 407V/T3 | 5 TV, 13 radio | 2/3 | 30( 000) |
| | Pay-TV | 12 447V/T4 | 5TV, 4 data | 3/4 | 27( 800) |
| | Pay TV | 12 487V/T5 | 3+ TV, data | 3/4 | 27( 800) |
| | Aurora 2 | 12 527V/T6 | 7TV, 20 radio | 3/4 | 30( 000) |
| | Pay-TV | 12 567V/T7 | 10 TV | 3/4 | 27( 800) |
| | Pay-TV | 12 607V/T8 | 10 TV | 3/4 | 27( 800) |
| | Pay-TV | 12 647V/T9 | 10 TV | 3/4 | 27( 800) |
| | Pay-TV | 12 692V/T10L | 6TV, 27 radio | 1/2 | 28( 650) |
| | Aurora MUX | 12 728V/T10U | 4TV, 17 radio | 1/2 | 24( 450) |
| | Austar | 12 305H/T11 | 6TV, 24 data | 3/4 | 30( 000) |
| | Pay-TV | 12 358H/T12 | 10 TV | 3/4 | 27( 800) |
| | Pay-TV | 12 398H/T13 | 10 TV | 3/4 | 27( 800) |
| | Pay-TV | 12 438H/T14 | 6TV, 3 data | 3/4 | 27( 800) |
| | Pay-TV | 12 478H/T15 | 10 TV | 3/4 | 27( 800) |
| | Pay-TV | 12 518H/T16 | 10 TV | 3/4 | 27( 800) |
| | Pay-TV | 12 558H/T17 | 10 TV | 3/4 | 27( 800) |
| | Pay TV | 12 598H/T18 | 10 TV | 3/4 | 27( 800) |
| | Pay-TV | 12 638H/T19 | 10TV, 30 radio | 3/4 | 27( 800) |
| | Pay TV | 12 688H/T20 | 11TV | 3/4 | 27( 800) |
| D1/160E | Sky NZ test | 12 394H | TV + | 3/4 | 22( 500) |
| | SBS west | 12 407H | TV+ | 5/6 | 12( 600) |
| | Freeview NZ | 12 456H | TV+ | 3/4 | 22( 500) |
| | Sky NZ | 12 519H | TV+ | 3/4 | 22( 500) |
| | Sky NZ | 12 519V | TV+ | 3/4 | 22( 500) |
| | ABC NSW | 12 514H | TV | 7/8 | 14( 294) |
| | ABC South | 12 532H | TV | 7/8 | 14( 294) |
| | ABC Northern | 12 550H | TV | 7/8 | 14( 294) |
| | ABC Western | 12 577H | TV | 7/8 | 14( 294) |
| | ABC Victoria | 12 595H | TV | 7/8 | 14( 294) |
| | ABC Qld | 12 613H | TV | 7/8 | 14( 294) |
| | Austr Mux | 12 643V | TV, radio, data | 3/4 | 6( 874) |
| | Feeds | 12 670V | TV | 3/4 | 6( 670) |
| J8/166E | SelecTV | 12 526H | 8+TV | 3/4 | 28( 800) |
| | CCTV | 12 557H | 3+TV | 3/4 | 13( 240) |
| | ABS-CBN | 12 575H | 4+TV, 4+ radio | 2/3 | 13( 845) |
| | MYSAT | 12 646H | up to 8 TV | 3/4 | 28( 066) |
| | JEDI/TVB | 12 686H | 11+ TV | 3/4 | 28( 126) |
| | PnGlobal Aust | 12 726H | 6+TV | 3/4 | 28 (066) |
| | ABC A-P | 4180/970H | 2TV, 2 radio | 3/4 | 27( 500) |
| | Hallmark Asia | 4166/984H | 1 TV | 3/4 | 6( 620) |
| | Disney Pac | 4140/1010H | typ 6 TV | 5/6 | 28( 125) |
| | NHK Joho | 4060/1090H | 7TV, 1 radio | 1/2 | 16( 180) |
| | FOX Mux | 4040/1110V | up to 5TV | 7/8 | 26( 470) |
| | NET + | 4121/1029V | 1 TV | 3/4 | 4( 774) |
| | ESPN USA | 4020/1130H | 8+TV, data | 3/4 | 26( 470) |
| | Discovery | 3980/1170H | 8 typ. | 3/4 | 27( 690) |
| | CalBqt/Pas8 | 3940/1210H | up to 3+ FTA | 7/8 | 27( 690) |
| | CNBC HK | 3900/1250H | up to 7TV | 3/4 | 27( 500) |
| | FilipinoMUX | 3880/1270V | up to 8TV+radio | 5/6 | 28( 694) |
| | CCTV Mux | 3829/1321H | up to 4 + 1 radio | 3/4 | 13( 240) |
| | TVBS-N | 3836/1314V | 1FTA, 4+ CA | 3/4 | 17( 500) |
| | EMTV PNG | 3808/1342V | 1 + 2 radio | 3/4 | 5( 632) |
| | CNNI | 3780/1370H | 3, up to 5 TV | 3/4 | 25( 000) |
| | Discovery Asia | 3764/1386V | Up to 6 TV | 3/4 | 19( 850) |
| | MTV | 3740/1410H | 8 | 2/3 | 27( 500) |
| I2/169E | WA Mux Pv | 12 281V | 3+ TV, radio | 2/3 | 27( 500) |
| | Ariang TV | 12 401V | 1TV | 3/4 | 4( 400) |
| | ABS-CBN | 12 575H | 4TV, 2 radio | | 13( 845) |
| | Test mux | 12 715H | 6+ TV | 2/3 | 30( 000) |
| | TARBS feeds | 4090V/1060V | 9TV + radio | 3/4 | 21( 000) |
| | BBC SCPC | 3986/1164H | 1TV | 1/2 | 5( 700) |
| | Middle East | 3836/1314V | 4 typ | 3/4 | 13( 331) |

## Receivers and Errata

was on 4048V, New Caledonia, parts of Australia
FTA SCPC,or, 3774H, 6 520, ¾ (June 06)
Services/bird new August 1, 2007
also. 3820V, 3940V,4100Vin blindscan
Tests, coverage unknown, Hz only? 09/07
PowerVu, some FTA (Ch 1 & 3)
CA & FTA NTSC Japan, Taiwan
scan 3500-4200 V+H, analogue 3860V
also try 3660/3540VVt, Sr 30 000, 3/4, some FTA
North beam, also try 3875R, 12 475, 1/2
Strong NZ & Australia, may now be 1/2, 6 525
Aust East beam - 3 FTA + 14 CA
**D2 will replace 16 January 2008**
differs from 12.407 C1, **tune ch FTA; NZ+Au**
Now Irdeto V2
NZ + Au, FTA + Mcrypt CA
occ feeds, NZ + Au, recently 12 553V
AMTV, Healing only FTA svcs now here
High performance beam, not NZ, new CA 07-06
High performance beam, not NZ, new CA 07-06
NZ + Au (Mcrypt, PowVu capable)
High performancebeam, not NZ, new CA 07-06
High performance beam, not NZ, new CA 07-06
ABC WA tests, FTA
SBS, radio tests WA FTA
Irdeto V2 CA, tests (GWN, WIN)
not currently in use
Tests; SBS-NDS CA, others FTA when here
NZ (90cm) + Australia **(Only C1 svc left on NZ)**
Australia NA only (leakage to Norfolk, New Cal)
Australia NA only (leakage), 9-Net x 3 widescreen
Arrow radio (still here), tone FTA
Pay-per-view movies, CA
Pay-per-view movies, CA
Pay-per-view movies, CA
ABC for Foxtel/Austar, previously 12 288V
changes September 2005
Austar inter, **Expo FTA**
NDS CA + Mcrypt, CA
CA, subscriptions available Australia, Norfolk
Sky News active, 'Help x 2' **FTA**
CA, subscriptions avail Au, Nrflk; **TVSN FTA**
CA, subscriptions available Australia, Norfolk
"Home"CA, subscription available Australia, Nrflk
CA, subscriptions available Australia, Norfolk
CA, subscription available Australia, Norfolk
CA, subscription available Australia, Norfolk
+ 12.421H, NZ beam
+12.451H/SE, 12.469H/Qld, 12.487H/south
**+12.483H**
+12.546, 581, 608, 644, 671.707, 734(all H)
Australia + NZ beam, SKY tests
Australia only
Australia only
Australia only
Australia only
Australia only
Australia only
**Imparja** (V1024/A1025)+ **NIT** (1040/1041), NZ+
Dual beam (Australia & NZ), V8 other feeds 08/07
& 12 286, 12 326
**FTA**-Australia
CA -Australia
FTA V=5340, A=790 -Australia
June 2002-Irdeto-2 CA - Australia
Some **FTA**-Australia
Dateline west, also east PAS2, 3901V
Temporary FTA (January 2007)
PowVu CA
PowVu CA & **FTA**, sub available-changes 05-06
was PAS-2, previously 3992Vt, **feeds FTA**
NET25 + FTA, new PIDS April '03, reload
PowVu CA, ch 11 DCP-CCP bootload, audio **FTA**
PowVu/CA (some audio **FTA**)
PowVu CA & **FTA (EWTN + CBS +TBN +)**
NDS CA (6 channels), one test card occ FTA
**Myx FTA** V1960, A1920 + radio FTA
PowVu FTA, replaces PAS-2 svc
CCTV cross pole, new SR 04-06
PowerVu CA
PowerVu, some audio **FTA**
PowerVu, Asian MUX, new parameters Nov '03
**# 8 MTV China FTA V289, A290;** rest CA
PowVu CA, WIN, ABC NT, SBS, status unknown
Test - may not stay permanently
Temp **FTA**, subs Aust 011-800-2270-0722
initially with 6 NTSC colour bars
Occ **FTA** (Chile +), BIG power reduction Nov 03
BBC World moved here January 2005
Subscriptions available; Strong Technology

| Bird | Service | RF/IF & Polarity | # Program Channels | FEC | Msym |
|---|---|---|---|---|---|
| (PAS2/169E) | **Adventists.tv** | 4040/1010H | 1 | 2/3 | 5(.900) |
| | **Feeds** | 3868/1182H | 1 | 2/3 | 6(.620) |
| | **Feeds** | 3939/1211H | 2 (typ NTSC) | 2/3 | 6(.620)/7(.498) |
| | Cal PowVu | 3901/1249H | up to 8 | 3/4 | 30(.800) |
| | HK bouquet | 3850/1300H | up to 8 | 2/3 | 24(.900) |
| | **Korean Bqt** | 3771/1379H | 1 | 3/4 | 6(.510) |
| **AMC23/172E** | **Various-tests** | 12.730H | up to 8 | 3/4 | 30(.000) |
| **1804/174E** | **iPSTAR** | 12.619H | 1 | 2/3 | 25(.220) |
| | **Tests-NZ beam** | 12.646H | 1 | 3/4 | 22(.418) |
| | **RFO Poly** | 4027/1123R | 1TV | 3/4 | 4(.566) |
| **1701/180E** | TNTV | 11.060&11.514V | 9 | 3/4 | 30(.000) |
| | **TVRFO** | 11.136V, 11.174V | 6+TV, 3+ radio | 3/4 | 23(.149) |
| | Canal+Sat | 11.610H | 16TV, 1 radio | 3/4 | 30(.000) |
| | PBS | 12.648HH | 16TV possible | 3/4 | 28(.066) |
| | TVNZ/BBC | 4186/964RHC | 1 | 3/4 | 5(.632) |
| | TVNZ | 4178/972RHC | 1 | 3/4 | 5(.632) |
| | AFRTS DTS | 4175/975L | 3 TV, 3 radio | 2/3 | 3(.680) |
| | TVNZ/Aptn | 4170/980RHC | 1 | 3/4 | 5(.632) |
| | Fiji Sky Pacific | 4095/1055LHC | 6TV + future radio | 3/4 | 16(.505) |
| | Fiji Sky Pacific | 4055/1095LHC | 7TV + future radio | 3/4 | 16(.505) |
| | TVNZ/feeds | 4052/1098RHC | 1 | 3/4 | 5(.632) |
| | **TVNZ feeds** | 4044/1106R | 1 | 3/4 | 5(.632) |
| | NBC to 7 Oz | 3960/1190R | 1 | 7/8 | 6(.447) |
| | **TBN Mux** | 3927/1223R | 4TV | 2/3 | 11 (394) |
| | **Ioarana** | 3772/1378L | 1 | 3/4 | 4(.566) |
| | NASA TV | 3854/1296R | 1 TV | 3/4 | 2(.000) |
| | TVNZ | 3846/1304R | 1 | 3/4 | 5(.632) |
| | USA feeds | 3749/1401R | 4? | ? | 26(.400) |
| NSS-5/177W | Pacific IP Data | 3763/1387R | none-data | 3/4 | 27(.500) |
| | **RFO/Tempo** | 3920/1230R | 1 | 3/4 | 2(893) |
| | **Wallis/Futuna** | 3922/1228L | 1 | | 2(.895) |
| | **BYU-TV** | 4185/965R | 1TV, 20+ audio | 1/2 | 6(.525) |
| | **Australia Temp.** | 12.522V | 8 SCPC | 7/8 & 5/6 | 14.294 & **12.600** |
| | **iPSTAR Tests** | 12.691V | 8 TV | 5/6 | 17(.600) |

## Receivers and Errata

| |
|---|
| New December 2003; 24/7 "Hope Chs." |
| FTA (occ sport); also try 3863,Sr6.100 |
| FTA-typ NTSC-occ sport, live Shuttle |
| PowVu CA + **FTA**(includes BBC-W 05-05) |
| was 4148Vt; some **FTA** |
| Korean MUX, reload 12-04; new Sr |
| Testing on NZ/East Australia beam |
| Tests, late May start; also 12.646H |
| Testing possible data links, June 2003 |
| SE spot beam; was 4027LHC |
| east spot; 10TV + r each, vertical pol. |
| **FTA** 11.136 Tahitian beam, 11.174 west beam, 12/04 |
| 1+ **FTA**, MediaGd "2", + 10.975 weaker |
| Testing Fiji region pay-TV (MDS) package (Oct '04) |
| DMV/NTL early vers. occ feeds, typ ca |
| DMV/NTL early vers., occ feeds, typ ca |
| 'DTS Direct to Sailors; audio previously FTA - gone |
| DMV/NTL early vers. occ feeds, typically ca |
| Nagravision CA ( Feb 1, 2005) New PIDS |
| All now (including Fiji 1) CA, 7 Feb, 2005) |
| DMV/NTL early vers.,occ feeds, typ ca |
| SCPC, mixed CA and **FTA** feeds |
| CA, Leitch encoded |
| January 2006-now 4 channels, new Sr |
| FTA SCPC; East Hemi Beam-Tahiti |
| 24/7 live NASA - West Hemi bm (can be difficult!) |
| SCPC, mixed CA & **FTA**, feeds |
| 16-QAM (not MPEG-2 compatible) |
| Data only but useful for dish alignment |
| Wallis & Futuna Island(s) service |
| Outward bound W & F |
| Global beam - requires sizeable dish |
| Aust beam 12.522, 538.555,574,604,**621**,**639** & **657** |
| CA Tests - Taiwan TV, data coming?? (NZ beam) |

## MPEG-2 DVB Receivers: (Data here believed accurate; we assume no responsibility for correctness!)

**AV-COMM R3100**. FTA, excellent sensitivity (review SF May 1998); new version Sept. '99. AV-COMM P/L, 61-2-9939-4377.
**AV-COMM Tiny Tot.** FTA, 12Vdc operated, palm sized, low power consumption; review SF#120. Contact # above.
**Coship 3188C**. Review SF#107. Blind search FTA rcvr; works well. Phoenix Technology Group (www.phoenixsatellite.com.au) (Irdeto 2 as well as FTA versions)
**Coship FTA, CA, HDD.** Review SF#143, state of art functions, blind search. Phoenix (above), Satlink NZ, fax 64-9-814-9447;
**Divitone:** "Left-handed" review SF#115; does "code key" entry. Available http://www.satmax.ws
**eMTech eM-100B** (FTA), eM-200B (FTA + Clx2), eM210B (FTA + 2xCI + positioner); KanSat 61-7-5484 6246 (review SF#89)
**eM-150/Homecast**. FTA + embedded multi-format, review SF#144. Sciteq (61-8-9409-6677) and Kristal (61-7-4728 7704)
**Fortec Star Lifetime**. Two versions, both blind search, code-key programmable, one X 2 CI. Review SF#119. www.aDigitaLife.com
**Homecast** (em-150, eM-1150, eM-2150) series of FTA, CA, HDD sate of art STBs, review SF#144. Sciteq (www.sciteq.com.au)
**Humax ICRI 5400** (Z). Embedded Irdeto + 2 CAM slots; initial units had NTSC glitch, now fixed. Widely available; new software avail 04-04, SF#76.
**Humax IRCI 5410** (Z). Adaptable version capable of holding multi-CA systems (SF#98, 99). Widely available; original importer Sciteq (www.sciteq.com.au).
**Hyundai-TV/COM.** HSS100B/G (Pacific) FTA. Different software; 2.26/2.27 good performers, 3.11 and those with Nokia tuners also good; later 5.0 not good.
**Hyundai HSS700**. FTA, PowerVu, SCPC/MCPC. Review SF March 1999. Kristal Electronics, 61-7-4788-8902.
**Hyundai HSS800CI**. FTA, Irdeto (with CAM) + other CA systems, PowerVu, NTSC. Kristal Electronics, above; review SF#63.
**INNOVIA IDS3088**. Review SF#111. Blind search FTA receiver. High quality IRD; available Phoenix TechnologyGroup, and Satmax (http://www.satmax.ws).
**KAON KSF-2000/KPSF-200FTA** receiver dynamic channel update/Freview channel mapping. Asoft Ltd 64-4-234-1096.
**KAON KSF-620R2** Multiroom FTA receiver Dynamic Channel update/Freeview channel mapping. ASoft Ltd. 64-4-234-1096.
**KAON KSC-N550H2R** new 160Gb Premium Dual PVR with analogue input. Asoft Ltd 64-4-234-1096.
**ID Digital CI-24 Sensor**. New August 2003; new lower noise tuner, extra sensitivity; CI Interface slot Irdeto 1 & 2; review SF#109. Sciteq 61-8-9409-6677.
**MediaStar D7.5**. New (May 00) single chip FTA; review June 2000 SF. MediaStar Comm. Int. 61-2-9618-5777 (www.mediastar.com.au)
**MediaStar D10.** FTA and Irdeto embedded CA. VG receiver; see review SF#96, August 2002. Contacts immediately above.
**MultiChoice (UEC) 660**. Essentially same as Australian 660, not grey market contrary to reports. Sciteq tel 61-8-9306-3738
**Nokia "d-box" (V1.7X).** European, FTA, may only be German language, capable of Dr. Overflow software. SF#95, p. 14.
**Nokia 9200/9500.** When equipped with proper software, does Aurora, originally did pay-TV services provided software has been "patched" with "Sandra" or similar program. See SF#95, p. 14, SF#96 p. 15. SatWorld 61-3-9773-9270 (www.satworld.com.au)
**Pace DGT400/DVR500**. Originally Galaxy (Now Foxtel+Austar). Irdeto, some FTA with difficulty (Foxtel Australia 1300-360818). UECs replaced.
**Pace "Worldbox"** (DSR-620 in NZ). Non-DVB compliant NDS CA including Sky NZ, no FTA; similar "Zenith" version (see SF#115, p. 15).
**Phoenix 111, 222, 333** models (no longer produced): Service, backup - Phoenix Technology Group 61 3 9553 3399; www.phoenixsatelite.com.au
**Pioneer TS4.** Mediaguard CA (no FTA), embedded Msym, FEC, only for Canal+Satellite (AntenneCal ++687-43.81.56)
**PowerVu** (D9223, 9225, 9234). Non-DVB compliant MPEG-2 unless loaded with software through ESPN Boot Loader (see below). Primarily sold for proprietary CA (NHK, CMT etc). For service only - call Scientific Atlanta 61-2-9452-3388. For revision model D9850, see Scientific Atlanta (below).
**Prosat 2102S**. FTA SCPC/MCPC, NTSC/PAL, SCART + RCA. Sciteq 61-8-9306-3738.
**SatCruiser DSR-101**. FTA SCPC/MCPC, PowVu, NTSC/PAL. (Skyvision Australia 61-3-9888-7491, Telsat 64-6-356-2749); no longer available.)
**SatCruiser DSR-201P**. FTA SCPC/MCPC, PowVu, NTSC/PAL, analogue, positioner - (Skyvision - see above); no longer available.
SATWORK ST3618. Blind search FTA receiver. Fast search, problems, especially in "memory-filing" system; review SF#111. Available DMSi at tim@dmsiusa.com
SATWORK ST3688. Blind search, 3000+ ch memory, multi-format RF modulator; improved version 3618. Review SF#113; available DMSi (above).
Scientific Atlanta D9223, D9234, D9225; Orig. PowerVu, superceded Dec 2003 by D9850. Commercial receiver, available TVO 61-2-9281-4481, John Martin
**Strong Technologies SRT2620**. SCPC, MCPC FTA, exc sensitivity, ease use, programming. Review SF#91 (ph. below).
**Strong 3650**. Budget priced entry level SCPC, MCPC new late 2007; review SF#160 (ph. below)
**Strong SRT 4600**. SCPC, MCPC, PowerVu; exc graphics, ease of use, review SF#64. Strong Technologies 61-3-8795-7990.
**Strong SRT 465_X (range)** New mid 2007, Conax + Irdeto CA; review SF#156. Receivers state of art, above average sensitivity. USB, blind scan (ph. below)
**Strong 4800**. SCPC, MCPC, embedded Irdeto+ CAM slots, does code-key with additional software, Aurora. Strong Technologies 61-3-8795-7990.
**Strong 4800 II**. SCPC, MCPC CAM slots x 2 for Aurora +, Zee, Canal +, code key with additional software. Strong Technologies (above); review SF#103.
**Strong 4890**. SCPC, MCPC, 30Gb PVR, 2 CAM slots, DiSEqC 1.0, 1.2 (review SF#84), does code key with additional software; Strong Technologies, # above.
**Strong 4892/4990** (new 2007). Latest technology MPEG-2;
UEC Atlas/Titan (1000). New July 2003, replacing DGT400 for Austar. No SCART, L-band loop; also available Rural Electronics 61-2-6361 3636.
**UEC642**. Designed for Aurora (Irdeto), approved by Optus; w/new software, C-band FTA; faulty P/S. Norsat 61-8-9451-8300.
**UEC660**. Upgraded UEC642, used by Sky Racing Aust., Foxtel,limited FTA. (Nationwide - 61-7-3252-2947); P/S problems.
**UEC700/720**. Single chip Irdeto built-in design for Foxtel, unfriendly for FTA. Power supply problems, seldom sold to consumers; propensity to fall off back of trucks
**"X" Digital**. When modified with "aftermarket" Internet softwre, does Aurora and other V-1 CA without card, review SF#119. Strong Technologies (61-3-8795-7990).
**Zinwell ZMX-7500.** Approved NZ Freeview, through authorised dealers; review SF#150; some unresolved technical issues as of June 2007.

Accessories:

**Aurora smart cards**. MCRYPT (Irdeto V2) cards now available (Jan 2005), Sciteq 61-8-9409-6677.
**PowerVu Software Upgrade**: PAS-8, 4020/1130Hz, Sr 26.470, 3/4; pgm ch 11 and follow instructions (do not leave early!)
**PowerVu** (Pacific) **repair service**: Cable & Sat Svcs, Darius West, 61-2-9792-1421 (Email darius@cases.net.au)

# WITH THE OBSERVERS

**AT PRESS DEADLINE**

Kordia has activated what appears to be a significantly powerful DTT test transmitter from the western Auckland transmission site; UHF channel 29. Instantly there have been problems at MATV systems previously using channels 28-29-30 throughout the CBD. Welcome to digital! (LM)

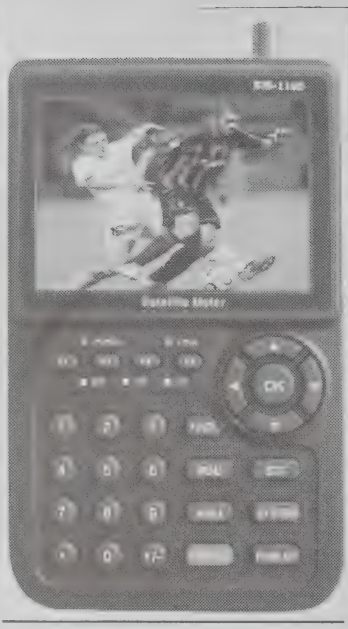
**Optus B3/D2/152E**: "D2 is operating on 12.706V (Sr 22.500, appears to be on dual-beam (NZ and Australia); this is new Globecast 'Home' transponder so start here when loading Globecast. NIT for 12.734V also appears but no signal as of December 6th." (**CS**, NZ) "SCTV had a message about a frequency change (to 12.608H, 22.500, 3/4) on December 18th which would be significantly earlier than the previous January (16) date. This frequency for that bandwidth is not possible on B3, suggesting they expect D2 to be functional for them by that date (and also explains why T13 on B3 has been cleared of services). Details from www.communitytv.com.auu." (**IF**, Qld.) "Using a 6m Ku rated solid dish, an enthusiast in Taiwan has found very serviceable signals from Globecast (12.397) during November; pretty much confirming the SF#152 April report on similar 'deep fringe' reception in the equatorial region of Africa from European boresight satellites. Oh - for a 4-6m tracking Ku rated dish in my backyard!" (FS, NZ) (Editor's note: Will be interesting to see what D2 does in Taiwan on this dish after B3 is phased out.)

**Optus D1/160E:** "CUE TV, new on Freeview, channel 23, remains on SKY as channel 110; it again appears SKY has transferred another low-interest-level service off to Freeview while simultaneously advising their subscriber receivers to shift to Freeview for reception." (**CS**, NZ) "Southern Cross Central left 12.647H (mid-November)." (**SW**) "SBS-W, World News on 12.407H, FTA, Sr 12.600, 5/6." (**Frank**)

**Soapbox:**"New Zealand has set an analogue switch-off date; sometime in 2012 or whenever digital reception capability is installed in 75% of homes - whichever is first to arrive. Unlike the USA, 'analogue is likely to be switched off region-by-region over a 12 month period'. Sometime prior to 2012, a to-be-selected region will have a 'trial turn-off' to assess consumer and industry responses." (**MT**, Wellington) (Editor's note: According to Government, presently 45% of homes have digital television reception - obviously starting with the penetration of SKY's pay-TV service as a base. A Government release describing this policy states, "*benefits include cost savings of around $123 million because less energy is required for digital transmission.*" Perhaps someone neglected to add-up the power bill for a typical 42" Plasma screen receiver - several times as much per hour as the 21 or 29" CRT set it replaces.) "It is all about cash and politics; Fiji's recently licensed Channel 2 television has now had the permit cancelled." (**A Sarak**) "FreeSat (in UK) will offer 'red button access' to latest news, sport stories, lottery and more including numerous channels of Beijing Olympics and interactive games. Total number of channels unconfirmed but expected to be 50+ when service launches in March-April." (**RB**, UK) "Australian election side effect: The OPEL wireless broadband network, has been 'modified' by the new (Rudd) government. Instead or perhaps in addition - this is unclear, they plan a fibre-to-the-node project which as we all known is significantly more expensive than wireless. Australia will be lucky to have 'universal broadband' by 2013!" (**IF**, Qld.) "Another challenge for the USA's transfer to digital. In areas threatened annually by hurricanes, tornadoes portable battery

Kerry Lumsden, 57, passed away November 23. Kerry was a New Zealand pioneer in the satellite, MATV -CATV worlds. His career included Group Rentals, Tisco, and a post at Sky in 1990 as installation manager. More recently, Kerry and Steve Johnson have operated as 'Event Communications Limited' tackling large scale MATV systems (above). He is survived by wife Delwyn; children Michael and Rebecca.

**WITH THE OBSERVERS:** Reports of new programmers, changes in established programming sources are encouraged from readers throughout the Pacific and Asian regions. Information shared here is an important tool in our ever expanding satellite TV universe. **Photos of yourself, your equipment** or off-air photos taken from your TV screen **are welcomed**. TV screen photos: If PAL or SECAM, set camera to f3.5-f5 at 1/15th second with ASA 100 film; for NTSC, change shutter speed to 1/30th. Use no flash, set camera on tripod or hold steady. Alternately submit any VHS speed, format reception directly to SatFACTS and we will photograph for you. Deadline for January 25th issue: January 10th by mail or 5PM NZST January 11th if by fax to 64-9-406-1083 or Email skyking@clear.net.nz.



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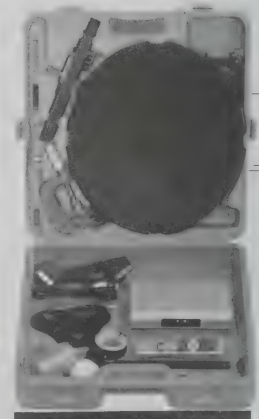

**Porta-Sat Kit**

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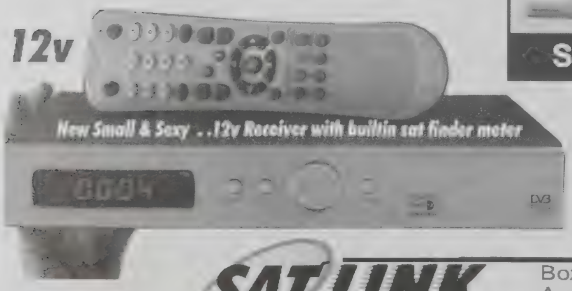
- Remote - Meter
- Dish - Mount

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operated TV is a prime information resource. Tests of early-available (there are very few models yet) have been very negative - the digital signals don't function well in a moving emergency vehicle, or into below ground shelters. US civilian defence authorities are recommending citizens acquire portable AM-FM radios and forget about the portable television option." (CS, Illinois) "A new Ka band (18-19 GHz) satellite to serve Australia, NZ, PNG is proposed for late 2009 launch; to be built by Space Systems Loral.." (**Bill T.**) (Editor's note: First they need to raise an estimated US$400 mil, find an orbit spot and figure out who needs it. Don't put the champagne on ice, just yet.)

An apology: This issue **is** late!

In 161 months, few issues of SatFACTS have been 'late'. This one, even allowing for Christmas mails, probably is late to your postal address. You deserve an explanation.

Lightning. Those streaks from storms that careen to ground and on occasion do damage. On Thursday December 6th at 6:47AM lightning struck a home at 72 SH10 in Coopers Beach. We operate (or try to operate) a 63 channel cable system and this home was one so connected; around $500,000 in damage - a major part of a $1m house. Virtually every electrical wire in the house is now 'visible' - from wall switch to ceiling fixture, the entire wire run is obvious because a dark brown or black trace appears along the wall, up across the ceiling. Every electrical appliance in the home was destroyed - big time.

From there the lightning sought 'true earth', coupled into the home's telephone line, the cable line, the power line feeding the home. The fun was just beginning. Hundreds of metres distant, fuses in our cable amplifiers evaporated, cable subscriber tap-off devices melted, and around 100 metres of buried 0.500 diameter aluminium sheathed cable disappeared - turned to powder. This was our cable TV primary trunk line into the community of Mangonui, and if you can figure out how one replaces 100m of buried and now disintegrated cable that crosses yards, under driveways, a feeder road - in a hurry, please let me know! Actually, replacing the cable (the storm continued throughout the day December 6, 7 and 8th - even as I write this on the 9th - making for interesting personal challenges) was not an option. The damage included 260 telephone lines destroyed, perhaps 50 television sets (both on and off the cable), dozens of kitchen and home appliances - when it is all added up someday, I suspect it will be between $1.5 and $2.5 million, everything zapped lumped into one summary. Back in September 2001 a similar lightning storm did almost identical damage to the western end of the cable plant. That one took two weeks to clean up - this one will possibly be completed in ten days or so. Oh yes - The EVO-S1 meter reviewed in this issue was a fantastic tool, even when soaked with water and mud. I hope Jason at aDigitalife appreciates the thoroughness of our tests and review!

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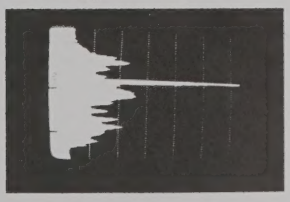
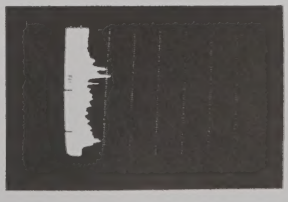


Spectrum Showing Unwired



Spectrum After Filtering

As each site that suffers interference is different, there is no one fix for all affected sites but over the past two years we have developed many combinations to give you the best chance of beating this problem. Our commercial solutions have a 100% success rate. If you are experiencing problems caused by interference feel free to call us and we will help find the best solution for you.

## Coop's Satellite/Terrestrial television reception reference library

Books and other unique goodies:

❑ **TELEVISION'S PIRATES:** *Hiding behind your picture tube.* This book, semi-autobiographical by Coop, traces the long and twisted path from early over the air FTA broadcasting to attempts to operate some services in a CA (conditional access) mode. And the fun-read part - the guys (and gals - identified by name and location) who "beat the system" or at the very least made life miserable for the service providers. This is the REAL story of television piracy, spanning nearly 50 years of time and hundreds of personalities. (First printed 2006) 928 pages - you won't read it the first night! US$29.95 (includes shipping inside USA - not Canada!), Au$34 plus shipping from NZ, NZ$39 (includes shipping inside New Zealand).

❑ **C-BAND Remembered:** More than 30 "stories" by the pioneers of home satellite reception. It was an era never to be repeated - American technology that reduced the cost of a (C-Band) home dish from $15,000 to under $1,000 in just two years, turning home dish reception into an international system. Coop asked 30 pioneers for their reflections on what they did, why, when and where and this unusual book tells it all. A gentle read, approximately 200 pages in writer-chapter form plus 32 pages of full colour illustrations from the 1980s era. (First printed 2007) US$20 (includes postage inside of USA), Au$23 plus shipping from New Zealand, NZ$27 (includes shipping inside of New Zealand).

❑ **SatFACTS Anthology:** Issues 1 through 156 (the first 13 years!) on CD/DVD. Nearly 5,000 pages of *SatFACTS* - from the first appearance of home satellite dishes in the Pacific through August 2007. The genuine material as it happened, right their on your PC screen (requires Acrobat Reader software to be used). US$40/Au$45/NZ$53 postage paid.

❑ **CATJ-CSD Anthology:** 1974 through 1987. Before there was SatFACTS, back in the US of A, from 1974 through 1979 Coop created CATJ (*Community Antenna Television Journal*) and from 1979 through 1987 CSD (*Coop's Satellite Digest*). This spans the full era from before satellite to the end of C-Band as America had grown to love it (from no home dish systems in 1978 to more than 3 million in 1987!). More than 10,000 pages (!!!) of as it happened - warts and all. This is the bargain of all bargains - US$30/Au$38/NZ$47 includes postage.

❑ **Coop's TV Reception Addendum:** 25+ valuable technical articles detailing subjects you will find no place else, from huge monster self-made terrestrial reception antennas to tricks you can do with your home satellite dish system that you probably thought impossible. Incudes detailed treatment for wiring motel/hotel systems with either satellite (L-Band) or VHF-UHF MATV. If it is worth researching, Coop has it here in CD format. US$25/Au$28/NZ$33 postage paid.

❑ **TVRO's Fifth Birthday Party:** The TV Show! The real people (pioneers) all gathered in one location (Nashville, Tennessee) and over two hours celebrating the origins of their industry. A professional "Awards" TV program, broadcast by HBO in 1983. US$25/Au$30/NZ$33 including postage. PAL format, plays on your PC.

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